

Bacon County, Georgia



Hazard Mitigation Plan 2018-2023

Including the City of Alma

This Plan produced for the Bacon County Board of Commissioners
by the Southern Georgia Regional Commission
through funding provided by the Federal Emergency Management Agency
and the Georgia Emergency Management Agency

Table of Contents

Chapter 1: Introduction to the Planning Process.....	1
Section I. Purpose and Need, Authority and Statement of Problem	1
Section II. Local Methodology, Plan Update Process, and Participants	3
Section III. Description of Review, Analysis, and Revision Method	6
Section IV. Organization of the Plan	7
Section V. Local Hazard, Risk and Vulnerability (HRV) Summary, Local Mitigation Goals, and Objectives.....	8
Section VI. Multi-Jurisdictional Special Considerations	9
Section VII. Adoption, Implementation, Monitoring, and Evaluation.....	9
Section VIII. Community Data.....	11
Chapter 2: Local Natural Hazard, Risk, and Vulnerability (HRV) Summary	14
Section I. Flood.....	15
Section II. Thunderstorms and Wind.....	21
Section III. Wildfire.....	28
Section IV. Drought.....	33
Section V. Tornado.....	37
Section VI. Hurricanes/Tropical Storms	40
Section VII. Hail.....	44
Section VIII. Severe Winter Storm.....	47
Chapter 3: Local Technological Hazard, Risk, and Vulnerability (HRV) Summary.....	50
Chapter 4: Local Natural Hazard Mitigation Goals and Objectives	51
Overall Community Mitigation Goals, Policies and Values Narrative	52
Section I. Flood.....	54
Section II. Thunderstorms and Wind.....	59
Section III. Wildfire.....	62
Section IV. Drought.....	80
Section V. Tornado.....	83
Section VI. Hurricanes/Tropical Storms.....	87
Section VII. Hail.....	94
Section VIII. Severe Winter Storm.....	97
Chapter 5. Local Technological Hazard Mitigation Goals and Objectives.....	100
Chapter 6: Executing The Plan.....	101
Section I. Implementation of the Action Plan.....	101
Section II. Evaluation and Monitoring	103
Section III. Plan Update and Maintenance	103
Chapter 7: Conclusion	105
References	106
Appendices	107

Chapter 1: Introduction to the Planning Process

Summary of changes:

Table 1.1 provides a brief description of each section in this chapter and a summary of changes that have been made.

CHAPTER 1 Section	Updates to Section
I. Purpose and Need, Authority, and Statement of Problem	<ul style="list-style-type: none"> • Language updated to reflect that this was an update to the existing plan
II. Local Methodology, Brief Description of the Plan Update Process and Participants in the Update Process	<ul style="list-style-type: none"> • All participating jurisdictions are the same as in the original plan
III. Description of How Each Section of the Original Plan Was Reviewed and Analyzed and Whether It Was Revised	<ul style="list-style-type: none"> • Planning Committee reviewed each section • Updates made using national, state, and local data
IV. Organization of Plan	<ul style="list-style-type: none"> • Consistent with original plan
V. Local Hazard, Risk and Vulnerability (HRV) Summary, Local Mitigation Goals and Objectives	<ul style="list-style-type: none"> • Updates made using national, state, and local data
VI. Multi-Jurisdictional Special Considerations (HRV, Goals, Special Needs)	<ul style="list-style-type: none"> • No major changes from original plan
VII. Adoption, Implementation, Monitoring and Evaluation (A General Description of the Processes)	<ul style="list-style-type: none"> • Evaluation method revised and updated.
VIII. Community Data (Demographics, Census, Commerce, History, Etc.)	<ul style="list-style-type: none"> • Updates made using most recent available Census Bureau data

Table 1.1: Overview of updates to Chapter 1: Introduction to the Planning Process

Section I. Purpose and Need, Authority and Statement of Problem

This document is the official plan update to the original Bacon County Pre-Disaster Mitigation Plan, which was approved by the Georgia Emergency Management Agency (GEMA) and the Federal Emergency Management Agency on February 1, 2008 and expired on February 1, 2013. The subsequent Plan Update took effect on February 1, 2013 and expires on February 1, 2018.

The purpose of this document is to provide an overview of the natural hazards that may impact Bacon County and the City of Alma, Georgia. Its purpose is also to outline Bacon County’s and the City of Alma’s plans for the Hazard Mitigation of potential loss of life and damages to property and the economy that may occur with these events.

This Plan is a direct result of research and a planning and public involvement process undertaken by the local government officials and citizens of Bacon County and the City of Alma after they formed the Bacon County Hazard Mitigation Plan Update Committee (hereafter known as the

Bacon County HMPUC). This Plan is the result of their commitment to reduce the risks of natural hazards and the effects of those natural hazards to their communities. The City of Alma is the only incorporated city located in Bacon County.

Hazard Mitigation is a means to address the potential damage that may be caused by natural or man-made disasters. This extends to addressing potential loss of life, property, economy, etc. that would not otherwise be addressed.

Authority for the development of this Plan was given by the Bacon County Commission as a result of their execution of the Grantee-Subgrantee Agreement for the Bacon County Hazard Mitigation Grant Program (HMGP) Planning Project; and by the City of Alma, located in Bacon County, through their participation in the planning project.

In order to initiate an outreach program to neighboring communities, governments, local and regional agencies, agencies authorized to regulate development, businesses, and the public, two Public Hearing Notices were published in the Bacon County legal organ newspaper. In addition, e-mail lists were kept updated and those on them were informed of meetings through e-mails, letters, and/or telephone calls. Surrounding county EMA Directors were notified of the plan update and invited to participate in the process. Additionally, several area county Hazard Mitigation Plans were being updated at the same time and an active meeting list was maintained for scheduling purposes.

Planning Division staff from the Southern Georgia Regional Commission, which represents eighteen counties in the region (including Bacon County), attended the Bacon County meetings. They participated in all aspects of the planning process and provided a regional perspective in the formation of the multi-jurisdictional Bacon County Hazard Mitigation Plan.

Through all of the above efforts, the multi-jurisdictional Bacon County/City of Alma Hazard Mitigation Plan was updated, including a comprehensive range of Mitigation Goals, Objectives, and Action Steps (see Chapter 4) which will assist the local governments in emphasizing a more direct approach to Hazard Mitigation. The long-term goal is to reduce potential natural disaster losses to life, property, and the economy through Hazard Mitigation efforts.

Section II. Local Methodology, Plan Update Process, and Participants

This Bacon County Hazard Mitigation Plan Update encompasses the jurisdictions of Bacon County and the City of Alma, both located in Southeast Georgia. Each of these jurisdictions also participated in the 2008 Hazard Mitigation Plan and the 2013 Hazard Mitigation Plan update. The Southern Georgia Regional Commission provided technical assistance. A Bacon County Hazard Mitigation Plan Update Committee (Bacon County HMPUC) was formed, and a year-long planning effort was undertaken, the final product of which was a Plan Update containing updated Mitigation Goals, Objectives, and Action Steps to reduce or eliminate the potential for loss of life and damage to property and the economy caused by natural disasters (see Chapter 4).

An important part of the planning process is the Organization of Resources. Assessing Risks is also an important step in the development of the Plan. This includes identifying hazards, profiling hazard events, inventorying assets and estimating losses. Developing the Hazard Mitigation Plan, as well as Implementing the Plan and Monitoring Its Progress, are the final key parts of the planning process.

Potential members of the Bacon County HMPUC were contacted by telephone or by letter/e-mail concerning their participation on the Committee. Southern Georgia Regional Commission (SGRC) staff provided technical assistance to the Bacon County HMPUC. The Bacon County HMPUC was comprised of representatives from Bacon County and the City of Alma and also included representatives from other groups and individuals, as shown below, who attended meetings and/or conducted research:

- Alma-Bacon County Emergency Management Agency, Director – Danny Turner, Administrative Assistant – June Medders
- Alma-Bacon County Fire Department/EMS, Assistant Chief – Scotty Boatright, Brent White, Harvey Cole Sr., Captain – Harvey Cole Jr., Lieutenant – Dale Wood, Firefighters – Chase Taylor, Michael Todd, Andy Smith, R. Dean Strickland, Amanda Trowell, Clayton Adams
- Bacon County Board of Commissioners, Chairman – Andy Hutto, Commissioners – John L. Thomas, Lee A. Hagans, Roy King
- Bacon County Board of Commissioners, County Clerk – Marylee Sweat
- Bacon County Board of Education, Superintendent and Operations Director – Scott Taylor
- Bacon County Development Authority, Director – Kevin Ellis
- Bacon County EMS/911, Director – Harlie Hall, Bradley Taylor
- Bacon County EMA/Road Department, Superintendent – Charley Medders
- Bacon County Memorial Hospital, Emergency Management Coordinator – Karen McCarthy
- Bacon County Sheriff's Office Patrol Commander – Bernard Cooks, Chief Jailer – Luke Hyers
- Bacon County Tax Assessor's Office, Chief Appraiser – Doug Miles
- City of Alma, Chief Code Enforcement Officer – Gary Taylor
- City of Alma, City Manager – Al Crace

- City of Alma, Mayor – Peggy Murphy
- City of Alma Police Department, Detective/Lieutenant – Scott Manning
- Georgia Emergency Management Agency, Program Manager – Scott Sherman
- Georgia Forestry Commission, Chief Ranger – Pete Prewis
- Ingram and Associates, Engineer – Tim Ingram
- Southern Georgia Regional Commission, Planner – Ariel Godwin
- State Fire Marshall’s Office, Investigator – Shane Taylor

The Committee held the following meetings, the sign-in sheets of which are included in Appendix E:

- Kick-off public hearing – August 11, 2016
- First workshop – September 8, 2016
- Second workshop – October 13, 2016
- Third workshop – November 10, 2016
- Fourth workshop – January 12, 2017
- Fifth workshop – February 9, 2017
- Final public hearing – Nov. 6, 2017

Building upon the approved 2013 Plan, each chapter was reviewed chronologically with updated hazard, risk, and vulnerability data, as well as previous accomplishments of mitigation strategy efforts.

Open discussion was permitted at all public meetings for suggestions and/or comments regarding the plan update process. Also, during general question and answer periods, comments (if any) were noted by the Southern Georgia Regional Commission staff and incorporated into the plan as appropriate.

Copies of the 2013 Plan were made available at each meeting, while relevant chapters and sections under discussion were photocopied and distributed to those in attendance for comments. Outside the formal meetings, parts of the plan were e-mailed to certain individuals who were unable to attend the meetings, and their comments were sought. Copies of the 2013 Plan and the draft Plan Update document were also available at the Bacon County Commission, Alma-Bacon County EMA Office, City of Alma, and on the SGRC website.

For the plan update, the Bacon County Hazard Mitigation Plan Update Committee (HMPUC) reviewed all chapters and sections of the prior plan and updated them as appropriate using national, state, and local data sources. The prior plan was used as a basis for the update. The HMPUC reviewed the individual parts of the prior plan (with an emphasis on the hazards, goals, objectives, and action steps) and update these elements through open discussion in which updates were noted by SGRC staff, who then used notes from the workshops to create the new Hazard Mitigation Plan document. The Wildfire sections were updated using the Georgia Forestry Commission’s Bacon County “Community Wildfire Protection Plan.” The CWPP was consulted to ensure consistency between the CWPP and HMP, and all action items from the CWPP that were still relevant were included as action steps in the HMP. Land use descriptions, information about zoning, and information about community services were updated using the Bacon

County/City of Alma Comprehensive Plan. Other documents used were the State of Georgia Hazard Mitigation Plan, Bacon County LEOP, and information from the National Climatic Data Center (NCDC). The State Hazard mitigation plan and LEOP were consulted to ensure the HMP would be consistent with both these plans, and data from the NCDC were used to create the Hazard Frequency Table and associated information regarding each hazard, which can be found in Chapter 2. Bacon County does not have a Flood Mitigation Assistance Plan nor a Flood Insurance Study.

Public Comment and Participation

The publication of a Public Notice in the legal organ is considered the legal method of notifying the public and inviting them to meetings.

The public was invited to attend and comment during two public hearings. The “kick-off” public hearing was held on August 11, 2016 and was advertised in *The Alma Times* (see Appendix E, Section I). 16 citizens, including staff and members of the Bacon County HMPUC, attended this public hearing, as well as one staff member from the Southern Georgia Regional Commission and one GEMA representative (see Appendix E, Section II). There were no substantive comments other than those complimentary of the planning process itself. Therefore, there was no need to consider or add materials derived from public comments at that time.

A second and final public hearing was held on Nov. 6, 2017 and was advertised in *The Alma Times* (see Appendix E). Citizens including staff and members of the Bacon County HMPUC were present (see Appendix E).

As mentioned above, in order to initiate an outreach program to neighboring communities, governments, agencies and businesses, two Public Hearing Notices were published in the Bacon County legal organ newspaper. In addition, e-mail lists were kept updated and those on them were informed of meetings through e-mails and/or telephone calls.

The Bacon County HMPUC decided on the following Mission Statement and the following Vision Statement in the original plan and re-confirmed them in this update to help guide them through the planning process.

Bacon County/City of Alma
Hazard Mitigation Plan Update Committee
Mission Statement

This committee’s mission is to make Bacon County, The City of Alma, its citizens, local governments, communities, residences and businesses less vulnerable to the effects of natural hazards. This will be accomplished through the effective administration of Hazard Mitigation Programs, hazard risk assessments, wise floodplain management and a coordinated approach to mitigation policy through state, regional and local planning activities.

Bacon County/City of Alma
Hazard Mitigation Plan Update Committee
Vision Statement

This committee’s vision is to institutionalize a local Hazard Mitigation ethic through leadership, professionalism and excellence, thus leading the way to a safe, sustainable, Bacon County and City of Alma.

Due to Bacon County and the City of Alma being such close-knit communities, the Bacon County HMPUC chose not to break into subcommittees, but to address issues as a whole group. Various members of this group had direct knowledge relating to Bacon County and City of Alma infrastructure and agencies, emergency planning, hazard planning, and the running of major departments and emergency services. Through their efforts this Plan was developed.

The Bacon County HMPUC was responsible for identifying natural hazard events and completing a profile (please see Chapter 2, Sections I-VIII, Appendix A, Sections I-VIII, and Appendix D, Section I), vulnerability assessment (please see Chapter 2, Sections I-VIII, Appendix A, Sections I-VIII, and Appendix D, Section I), potential loss estimation (please see Chapter 2, Sections I-VIII, Appendix A, Sections I-VIII, and Appendix D Section I), and updating the Georgia Mitigation Information System (GMIS) Critical Facilities Inventory (please see <https://www.itos.uga.edu/gema>). They were also responsible for reviewing and updating the Mitigation Goals, Objectives, and Action Steps (please see Chapter 4 Sections I-VIII), among other responsibilities.

Section III.
Description of Review, Analysis, and Revision Method

For the plan update, the Bacon County Hazard Mitigation Plan Update Committee (HMPUC) reviewed all chapters and sections of the original plan and updated them (if appropriate) using national, state, and local sources. In particular, the Wildfire section(s) were updated using the Georgia Forestry Commission’s Bacon County Community Wildfire Protection Plan; other chapters and sections were updated using the Bacon County/City of Alma Comprehensive Plan Five-Year Short Term Work Program, State of Georgia Hazard Mitigation Plan, and information from the National Climatic Data Center (NCDC).

After organizing resources, an update of the risk assessment was performed. New forms, worksheets, and data (included in the Appendix) were also completed. Afterward, the Mitigation Goals, Objectives, and Action Steps were reviewed to determine if they were to remain the same, be added to, modified, or removed.

Chapters 1, 2, 4, 6, and 7 have been updated to reflect the new material. Please see the tables at the beginning of the chapters for further information regarding which sections were changed and what items were updated.

Section IV. **Organization of the Plan**

This Plan focuses on eight natural hazards chosen by the Bacon County HMPUC that may affect and cause damage to Bacon County and the City of Alma. Chapter 2, Chapter 4, and Appendix A are each subdivided into Sections I through VIII; these sections reflect the 8 natural hazards that were chosen. The natural hazards are as follows (in order of priority): I. Flood; II. Thunderstorm/Wind; III. Wildfire; IV, Drought; V. Tornado; VI. Hurricane/Tropical Storm; VII. Hail; and VIII. Severe Winter Storm.

Five of these hazards constitute an equal threat to all geographic areas of the community. Of the remaining three, flood, wildfire, and wind are the only spatially definable hazards chosen by Bacon County and the City of Alma. Flood and wildfire are limited to somewhat smaller areas (For flood, see Chapter 2, Section I and Appendix A, Section I; For wildfire, see Chapter 2, Section III and Appendix A, Section III). Bacon County contains two different wind hazard zones (see Chapter 2, Section II).

Other information on these hazards was obtained from GEMA Worksheet 3A: Inventory of Assets, contained in Appendix A, and the National Climatic Data Center Information in Appendix F.

Various wildfire maps and other information have been produced through the Georgia Forestry Commission and included in their “Community Wildfire Protection Plan” for Bacon County (see Appendix C).

Other hazards, such as Avalanche, Coastal Erosion, Coastal Storm, Dam Failure, Earthquake, Expansive Soils, Extreme Heat, Land Slide, SLOSH (Sea, Lake and Overland Surges from Hurricanes), Tsunami, and Volcano, were examined and determined to be non-factors in Bacon County and the City of Alma, based on past history and information contained in Appendix F.

This Plan also contains a Hazard, Risk and Vulnerability (HRV) Assessment (see Appendix A), a comprehensive range of Mitigation Goals, Objectives, and Action Steps (Chapter 4, Sections I-VIII), other information on implementation of the Action Plan, monitoring, and plan update and maintenance (see Chapter 6), as well as other FEMA-required items and materials (Various Chapters, Sections and Appendices).

In the future, Bacon County Commissioners and City Council Members of the City of Alma will assign staff to implement the comprehensive range of Mitigation Goals, Objectives, and Action Steps and other pertinent items and reports contained in this Plan.

The Bacon County and City of Alma Hazard Mitigation Plan exists in one bound volume appended with various papers and documents, as well as a single PDF that is available on the SGRC website. The planning efforts of Bacon County and the City of Alma are intended to be an ongoing process and the Plan is to be amended as appropriate.

This Plan was prepared for:
Bacon County Board of Commissioners

P.O. Box 356
Alma, Georgia 31510
Voice: (912) 632-5214 Fax: (912) 632-2757
dturner@baconcounty.org

This Plan was prepared by:
Southern Georgia Regional Commission
327 West Savannah Avenue
Valdosta, Georgia 31601
Voice: (229) 333-5277 Fax: (229) 333-5312
agodwin@sgrc.us

Copies of the Plan are on file and may be examined at the Bacon County Commission Offices, Alma City Hall, Alma-Bacon County Emergency Management Agency, Bacon County Public Library, Southern Georgia Regional Commission (as well as the SGRC website), and at the Georgia Emergency Management Agency (GEMA).

Section V. **Local Hazard, Risk and Vulnerability (HRV) Summary, Local Mitigation** **Goals, and Objectives**

The Bacon County HMPUC determined that the hazards established in the 2013 plan were still the most significant threats to Bacon County and the City of Alma.

A Hazard, Risk, and Vulnerability (HRV) Assessment has been formulated through a variety of information obtained during the planning process. Information has been obtained from web sites, published sources, and personal accounts regarding hazards, their history in the community, and when and where they were active. These may be seen in Appendix A, Appendix D, and Appendix F.

The vulnerability of Bacon County and the City of Alma to natural hazards (including types, numbers, and value of properties) is included in the GEMA Worksheet #3A: Inventory of Assets (contained in Appendix A), the GMIS Critical Facilities Inventory (see Appendix F), and the GEMA Worksheet: Bacon County/City of Alma PDM Hazard Frequencies Table (see Appendix D Section I). Chapter 2, Sections I-VIII contain an overall summary of each hazard and its past and potential effect on the community.

The type and value of the various properties in the communities is obtained as a base value as reported on GEMA Worksheet #3A: Inventory of Assets (contained in Appendix A I-VIII Parts B and adjusted for the coverage of each possible selected hazard). Critical Facilities and Critical Infrastructure are also examined as to the present value and potential losses from natural hazards (see Appendix F).

A description that identifies and analyses a comprehensive range of Mitigation Goals, Objectives, and Action Steps to reduce the effects of each hazard (based on risk assessment findings) is included in Chapter 4, Sections I-VIII. In Chapter 6, Section I, there is a description

related to prioritization of these Mitigation Goals, Objectives, and Action Steps through the use of cost/benefit analysis, STAPLEE (Social, Technical, Administrative, Political, Legal, Economic and Environmental), and other criteria.

In Chapter 6 there are sections on Implementing the Action Plan (see Section I), Evaluation, Monitoring, Updating (see Section II), and Plan Update and Maintenance (see Section III). Each jurisdiction has identifiable comprehensive ranges of Mitigation Goals, Objectives, and Action Steps related to them that are contained in Chapter 4 Sections I-VIII.

Section VI. **Multi-Jurisdictional Special Considerations**

Bacon County has approximately 285.8 square miles of total area, according to the Georgia Statistics System (www.georgiastats.uga.edu), ranking 104th among counties in Georgia in terms of area. As such, certain services, including certain emergency services, may be located some distance away from population centers. There is only one incorporated city in Bacon County, the City of Alma

Virtually all of Bacon County and the City of Alma may be affected by wildfire. Geographical differences are not so much dependent on jurisdiction, as on land use and fire district resources. The Alma-Bacon County Main Fire Station is staffed by a paid force. Six Fire Department properties in Bacon County are staffed by volunteers. The following are the ISO classes of fire districts in the community:

Station 1: Alma-Bacon County Main:	Class 5
Station 2: Bennett Still:	Class 9
Station 3: New Lacey:	Class 9
Station 4 Sessoms:	Class 9
Station 5: Taylor Town:	Class 9
Station 6: Ware:	Class 9
Station 7: Warnock:	Class 9

In Chapter 2, Sections I-VIII, Subsection F, multi-jurisdictional differences for each hazard are described.

Section VII. **Adoption, Implementation, Monitoring, and Evaluation**

Prior to the final public hearing, the final draft plan was submitted to both local governments (Bacon County and the City of Alma) for their final review.

The final draft plan was submitted to GEMA and FEMA for their approval. After their approval, and any recommended changes, resolutions were passed by the local governments after a public hearing for comment and review on Nov. 6, 2017 adopting the Plan Update. Copies of the resolutions are available in Appendix E.

The comprehensive range of Mitigation Goals, Objectives, and Action Steps (see Chapter 4 Sections I-VIII), which contains item related to all local governments, will be implemented as soon as possible and/or as funds become available to do so.

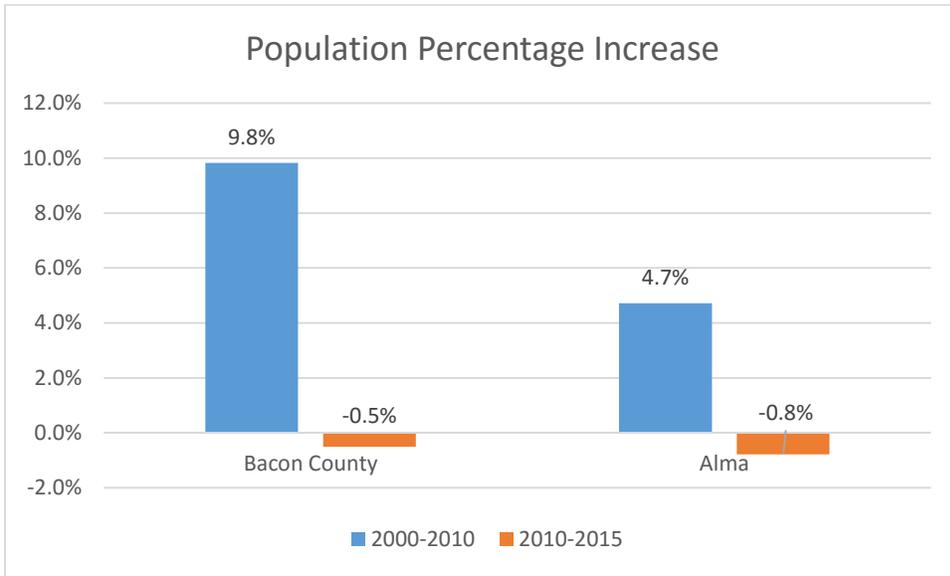
All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, etc.).

The Alma-Bacon County EMA Director will be charged with ensuring that this plan is implemented, monitored, and periodically updated in subsequent years. The EMA Director will oversee implementation, monitoring, and updates for both jurisdictions (Bacon County and the City of Alma). The method that the Alma-Bacon County EMA will use to monitor the plan and evaluate implementation progress will be the following:

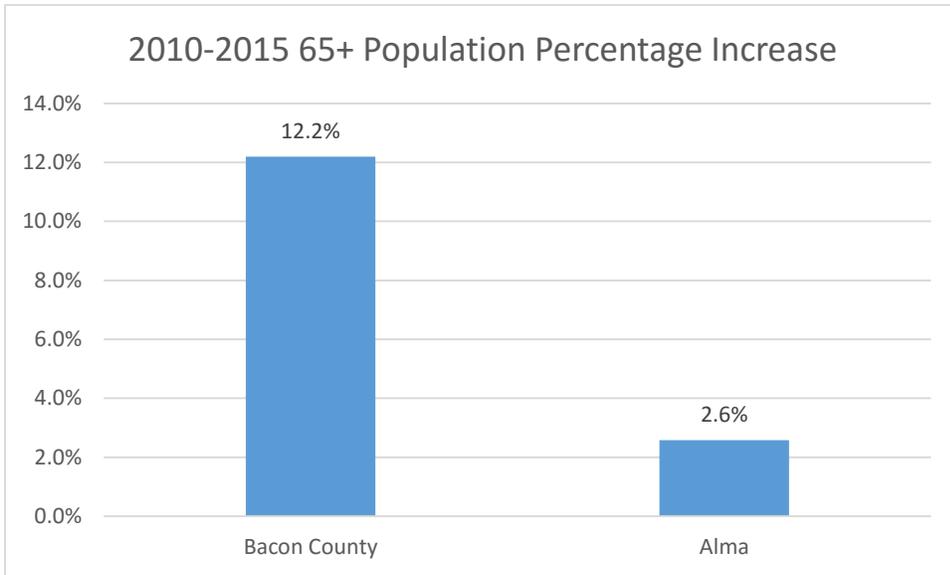
- The Alma-Bacon County EMA will conduct quarterly telephone interviews with the various local governments and area agencies in order to chart their plan progress.
- The EMA Director will hold formal public meetings at least once a year to monitor the progress of the plan implementation and allow the public a forum for expressing concerns, opinions, and ideas.
- Throughout the year, a series of informal meetings will be held in which various aspects of the plan, including monitoring and evaluation, are discussed.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

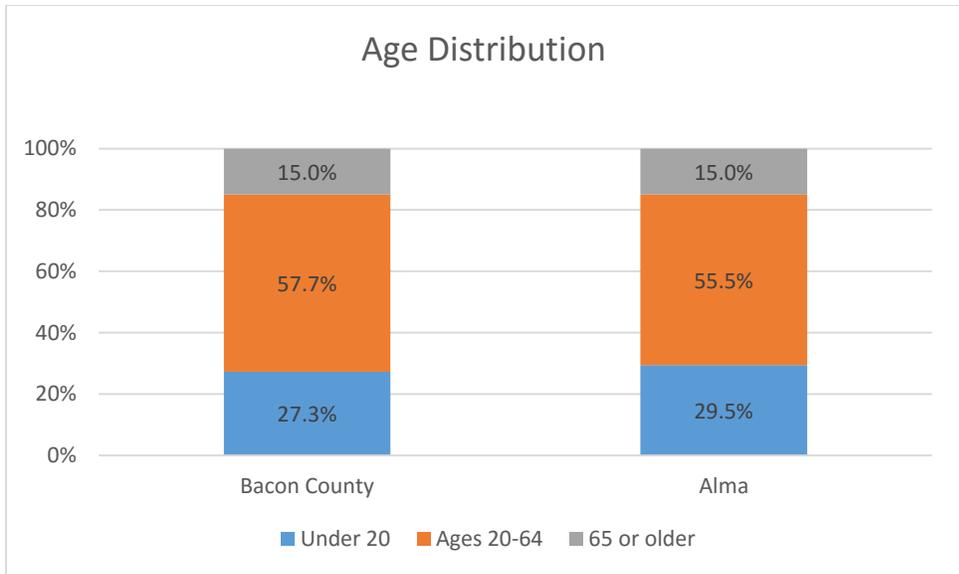
Section VIII. Community Data



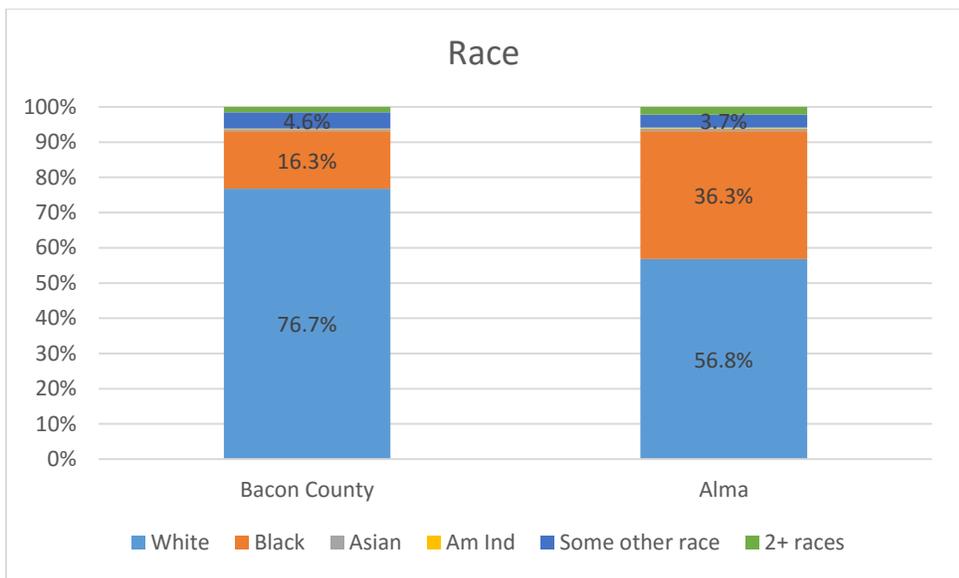
The 2015 population of Bacon County is 11,040, a decrease of 0.5% since 2010. The City of Alma's 2015 population is 3,439, a 0.8% decrease since 2010. Both jurisdictions gained population from 2000 to 2010 (9.8% for Bacon County and 4.7% for the City of Alma).



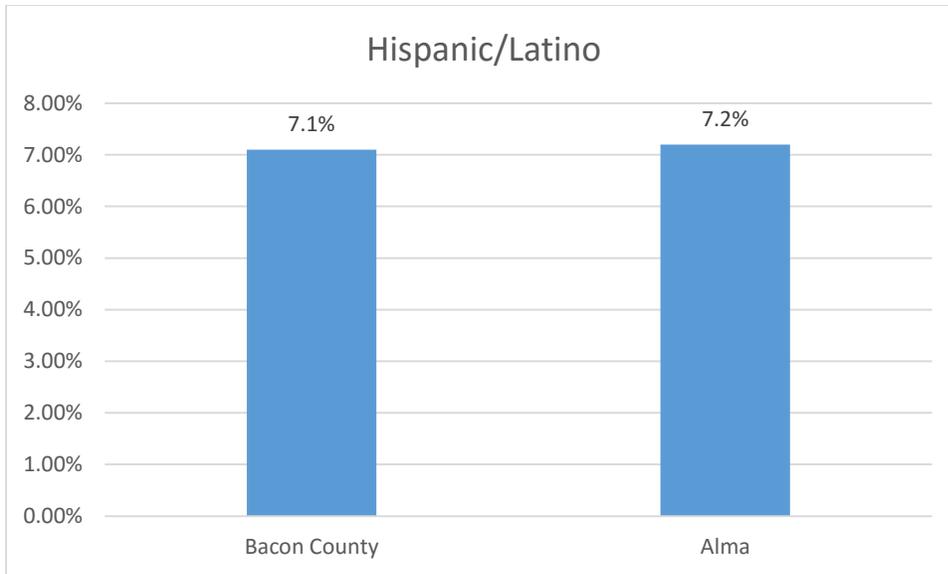
However, the percentage of the population aged 65 and older has increased, by 2.6% in the City of Alma and 12.2% in Bacon County.



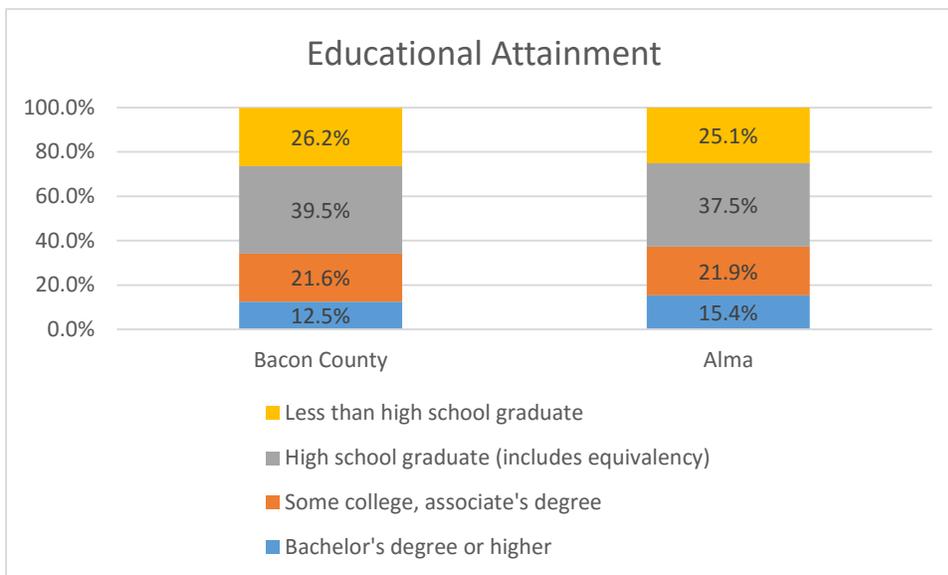
According to 2015 estimates, the age distribution in Bacon County is 15.0% over 65, 57.7% ages 20-64, and 27.3% under 20. In the City of Alma, the age distribution is 15.0% over 65, 55.5% ages 20-64, and 29.5% under 20. Bacon County’s population is 50.5% female and 49.5% male, and the City of Alma’s population is 51.8% female and 48.2% male.



The population of Bacon County is 76.7% White/Caucasian, 16.3% Black/African American, 4.6% some other race, 1.5% two or more races, 0.6% Asian, and 0.2% Native American. The City of Alma’s population is 56.8% White/Caucasian, 36.3% Black/African American, 3.7% some other race, 2.2% two or more races, 0.8% Asian, and 0.2% Native American.



Bacon County’s population is 7.1% Hispanic/Latino of any race, and the City of Alma’s population is 7.2% Hispanic/Latino of any race.



Among persons aged 25 or older, in Bacon County, 26.2% have no high school diploma, 39.5% are high school graduates (includes equivalency) with no further education, 21.6% have an associate’s degree or some college, and 12.5% have a bachelor’s or higher degree. Among persons aged 25 or older in the City of Alma, 25.1% have no high school diploma, 37.5% are high school graduates (includes equivalency) with no further education, 21.9% have an associate’s degree or some college, and 15.4% have a bachelor’s or higher degree.

The median household income in Bacon County is \$37,698 and the median household income in the City of Alma is \$33,019. An estimated 20.4% of Bacon County’s population and 32.7% of the City of Alma’s population lives below the federal poverty level. In Bacon County, 27.6% of persons under age 18 live below the poverty level and in the City of Alma 48.2% of persons under age 18 live below the poverty level. Bacon County’s estimated unemployment rate is 2.7% and the City of Alma’s unemployment rate is 3.2%. Among adults aged 16 and older, the rate of labor force participation is 54.3% in Bacon County and 48.4% in the City of Alma.

Data source: U.S. Census Bureau (www.census.gov)

Chapter 2: Local Natural Hazard, Risk, and Vulnerability (HRV) Summary

Summary of changes:

Table 2.1 provides a brief description of each section in this chapter and a summary of changes that have been made.

Chapter 2 Section	Updates to Section
I. Flood	Updated data and information; edited for clarity
II. Thunderstorm/Wind	Updated data and information; edited for clarity
III. Wildfire	Updated data and information; edited for clarity
IV. Drought	Updated data and information; edited for clarity
V. Tornado	Updated data and information; edited for clarity
VI. Hurricane/Tropical Storm	Updated data and information; edited for clarity
VII. Hail	Updated data and information; edited for clarity
VIII. Severe Winter Storm	Updated data and information; edited for clarity

Table 2.1: Overview of updates to Chapter 2

Through the use of GEMA Worksheet #1: Identify The Hazard (copy contained in Appendix D Section I), the FEMA-described methodology, and other factors, various data were collected (see Appendix A, Appendix D, and Appendix F). The Bacon County HMPUC listed all of the natural hazards that may occur. Afterward, they focused on the natural hazards commonly recognized as threats to the jurisdictions that were the most prevalent and most likely to occur and cause damages in Bacon County and the City of Alma.

The eight chosen hazards are the same eight hazards that were included in the 2013 Hazard Mitigation Plan. No hazards have been added to or subtracted from that 2013 Hazard Mitigation Plan.

Five of these hazards constitute an equal threat to all geographic areas of the community. Of the remaining three, flood, wildfire, and wind are the only spatially definable hazards chosen by Bacon County and the City of Alma. Flood and wildfire are limited to somewhat smaller areas (For flood, see Chapter 2, Section I and Appendix A, Section I; For wildfire, see Chapter 2, Section III and Appendix A, Section III). Bacon County contains two different wind hazard zones (see Chapter 2, Section II).

Various wildfire maps and other information have been produced through the Georgia Forestry Commission’s “Community Wildfire Protection Plan” for Bacon County (see Appendix C).

Other hazards such as Avalanche, Coastal Erosion, Coastal Storm, Dam Failure, Earthquake, Expansive Soils, Extreme Heat, Land Slide, SLOSH (Sea, Lake and Overland Surges from Hurricanes), Tsunami, and Volcano were examined and determined not to be significant hazards for Bacon County and the City of Alma, based on past history and information contained in Appendix D, the GMIS Critical Facilities Inventory materials, and maps available in Appendix A of this plan.

Section I. Flood

A. Identification of Hazard:

The threat of a flood has been chosen by the Bacon County HMPUC as the most likely hazard to occur and cause damage in Bacon County and the City of Alma based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. For further information, see the HAZUS Report in Appendix G.

In addition, hazard maps generated by the GMIS Critical Facilities Inventory for Flood (see Appendix A) were examined. Complete inventory information is contained at <https://www.itos.uga.edu/gema>. These map values come from the predicted model of the GEMA database.

Floods may occur at any time, in many cases without warning, and may cause widespread destruction. Drainage ditches and canals that are improperly cleaned or maintained may exacerbate flooding, causing homeowners to experience hours, if not days, of water-filled yards as well as water damage.

There are several different kinds of floods, three of which can occur in Georgia: River floods, coastal floods, and urban floods. most flash floods are caused by rain from slow moving thunderstorms, storms repeatedly moving over the same area, or heavy rains from hurricane/tropical storm events.

Flash floods are the number one weather-related killer in the United States, and flooding accounts for the majority of natural hazard damages. Six inches of fast moving water can knock a person off of his or her feet. Two feet of water can float a full-sized automobile. More than half of flood victims are in vehicles that moving water sweeps away.

Bacon County and the City of Alma are both members of the National Flood Insurance Program. Both local governments have some part of their jurisdictions located within a floodplain. As of late 2016, both jurisdictions are in compliance with NFIP requirements.

Bacon County and the City of Alma do not participate in the Community Rating System (CRS) program. As of 2016, they were not eligible, according to FEMA (<http://www.fema.gov/library/viewRecord.do?id=3629>).

B. Profile of Flood Events, Frequency of Occurrences, Probability:

The historic record for floods is spotty at best, with many unreported or underreported flood events. Members of the Bacon County HMPUC have witnessed many unreported and underreported cases of minor to major flooding occurring within Bacon County and the City of Alma, some lasting for days at a time, following large rain events. However, only certain areas of Bacon County and the City of Alma are usually vulnerable to major flooding.

Many of these major flooding areas are located on or adjacent to the Big Satilla Creek, Hurricane Creek, and numerous other creeks and streams. In the City of Alma, certain areas surrounding Hurricane Creek and the drainage canals are subject to flooding.

Base flood elevations are provided by FEMA in their floodplain maps. Within Bacon County, the base flood elevations range between 141 feet above sea level and 149 feet above sea level. The chart below, generated on the NOAA website (water.weather.gov), shows Flood Stages and Historic Crests for the Satilla River near Waycross, which is the nearest point on the Satilla River to Bacon County and Alma. The historical crests show the highest crest of 22.40 feet in 1948.

Satilla River Near Waycross (AYSG1)

[Return to Top](#)

Flood Stage: 16 Feet Latest Stage: 7.9

Current Warnings/Statements/Advisories: None currently.

[Complete information about the Satilla River near Waycross available from NWS Jacksonville, FL](#)

Reliability of the Forecast:
Based on unobstructed flow
NOTE:Forecasts for the Satilla River near Waycross are issued routinely year-round.

Flood Impacts

If you notice any errors in the below information, please contact our [Webmaster](#)

20
Effects railroad bridge. Rail traffic must be rerouted. On the Pierce County side, low lying roads are flooded and homes are threatened in the Riverwoods Drive community and in the Okefenokee Country Club.

18
On the Pierce County side, the Okefenokee Country Club Golf Course is generally closed. Riverwoods Drive low lying properties begin to flood.

17
On the Ware County side, the Jamestown Road Boat Ramp parking lot and access road is flooded and Simmons Trail is flooded cutting off one residence. On the Pierce County side, the Okefenokee Country Club Course Holes 14 through 16 begin to flood.

16
Flooding of agriculture and timberlands begins. On the Ware County side, the Jamestown Road Boat Ramp is flooded. On the Pierce/Brantley county line at the State Road 121 Bridge the boat ramp and dirt access roads are flooded.

Flood Categories (in feet)	Historic Crests	Recent Crests
Major Flood Stage: 20	(1) 22.40 ft on 04/04/1948	(1) 17.39 ft on 04/06/2016
Moderate Flood Stage: 18	(2) 22.36 ft on 04/05/2009	(2) 18.43 ft on 02/08/2016
Flood Stage: 16	(3) 22.20 ft on 05/01/1928	(3) 15.67 ft on 03/03/2015
Flood Stage: 16	(4) 21.52 ft on 03/06/1991	(4) 17.11 ft on 12/28/2014
Action Stage: 14	(5) 20.29 ft on 03/10/1984	(5) 17.68 ft on 04/23/2014
	(6) 20.23 ft on 03/12/1998	(6) 16.30 ft on 04/12/2014
	(7) 20.10 ft on 12/08/1964	(7) 15.54 ft on 03/22/2014
	(8) 20.03 ft on 02/13/1986	(8) 16.41 ft on 08/22/2013
	(9) 19.77 ft on 02/02/1991	(9) 16.94 ft on 07/10/2013
	(10) 19.72 ft on 04/08/1960	(10) 14.61 ft on 05/10/2013
	Show More Historic Crests	Show More Recent Crests
	(P): Preliminary values subject to further review.	(P): Preliminary values subject to further review.

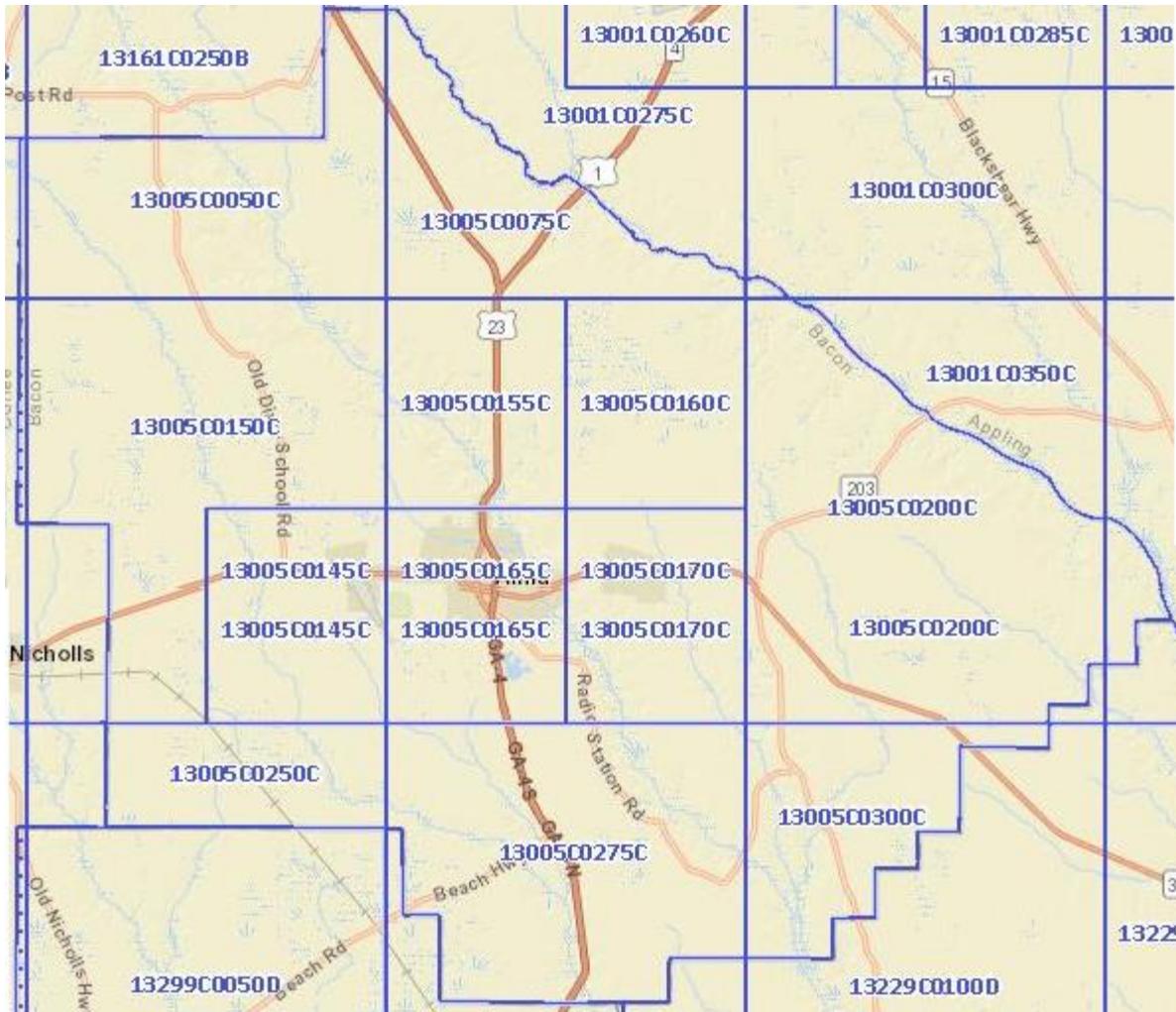
Bacon County and the City of Alma were part of the Presidentially declared disaster FEMA-DR-1883-GA, Severe Storms, Flooding, Tornadoes, and Straight Line Winds, which occurred from March 26, 2009 through April 13, 2009. Damage to roads was caused by heavy rains that caused widespread flooding in the southern half of Georgia, with several counties receiving five to seven inches of rain and some areas receiving 10 inches. Bacon/Alma experienced flooding on 10 dirt roads and 2 paved roads, for a total of 480 miles, also affecting 160 culverts and 2 bridges. Since the previous plan was completed, there have been notable flood events in 2014 as well as some flooding in 2016 due to Hurricane Matthew.

According to the National Climatic Data Center (NCDC), there are 9 flood events reported (including Flash Flood and Heavy Rain) occurring in Bacon County between Jan 1, 1997 and Dec. 31, 2016. Five events were countywide, two affected the City of Alma, one affected the north portion of the county, and one near the unincorporated community of Coffee in Bacon County (not to be confused with Coffee County, Georgia). Four of these events were Flood events, four were Flash Flood events, and one was a Heavy Rain event. The estimated total property damage from these events was \$137,500. Total injuries were reported as zero.

According to NCDC data, two Flood events have occurred since the last Hazard Mitigation Plan update, in 2013 and 2015. One event (2013) was in Alma and one was in the community of Coffee (2015).

The Historic Recurrence Interval is 7.33 years. This is a 13.64% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.1, the past 20-year frequency is 0.45, and the past 50-year frequency is 0.18 (see GEMA PDM Hazard Frequencies Table contained in Appendix D Section I).

Flood Insurance Rate Maps (FIRMs) in effect for Bacon County and the City of Alma include maps 13001C0375C, 13005C0050C, 13005C0075C, 13005C0145C, 13005C0150C, 13005C0155C, 13005C0160C, 13005C0165C, 13005C0170C, 13005C0200C, 13005C0250C, 13005C0275C, 13005C0300C, and 13005C0300C (effective Sept. 25, 2009; see index map below).



Flood Insurance Rate Maps for Bacon County and the City of Alma. Data Source: FEMA website.

The GMIS Critical Facilities Inventory Database Reports contained in Appendix F show that certain areas of Bacon County and the City of Alma fall within the Flood Hazard Area. Complete inventory information is contained at <https://www.itos.uga.edu/gema>. There does not appear to be enough data information at the present time to determine differences in flood hazard level between Bacon County and the City of Alma hazards and/or risks.

Since the previous plan was completed, no changes have occurred that would affect the community's overall vulnerability to this hazard.

C./D. Inventory of Assets Exposed and Potential Loss to Flood:

To determine what assets in Bacon County and the City of Alma are potentially exposed to flooding, a GIS analysis was conducted using FEMA flood zone data, tax roll data from the Bacon County Tax Assessor's Office, and Critical Facilities data housed in the GMIS database (corresponding to the Critical Facilities Inventory which is provided in Appendix F). Approximately 8.1 percent of Bacon County (14,767 acres) is within a flood zone, and approximately 10.2 percent of the City of Alma (414 acres) is within a flood zone.

Many of these major flooding areas are located on or adjacent to the Big Satilla Creek, Hurricane Creek, and numerous other creeks and streams. In the City of Alma, there are certain areas surrounding Hurricane Creek and the drainage canals that are subject to flooding.

However, when and where floods will occur and the potential damage that they will cause cannot be predicted with any high level of confidence due to the variation in the strength levels of the causes that may trigger the occurrence.

The below assets are exposed to floods (see GEMA Worksheet 3A: Inventory of Assets, contained in Appendix A, Section I, and other information related to flood contained in Chapter 4, Appendix A, and Appendix F).

Jurisdiction:	Flood Hazard Score 1	Flood Hazard Score 2	Flood Hazard Score 3	Totals:
City of Alma – Number of Facilities:	6	2	1	9
Total Value:	\$39,638,149	\$66,046	\$17,000	\$39,721,195
Bacon County – Number of Facilities:	21	0	0	21
Total Value:	\$59,850,778	-	-	\$59,850,778
Total – Number of Facilities:	27	2	1	30
Total Value:	\$99,488,927	\$66,046	\$17,000	\$99,571,973

Table 2.2: Critical Facilities by Flood Zone (data source: GMIS, Bacon County, City of Alma)

Approximately 6.9% of the Residential property (271 of 3,931) in Bacon County (which includes the Residential properties in the City of Alma) lies within a flood zone and therefore may be affected, with a total value of \$21,348,263. Also, approximately 15.6% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (197 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$52,029,699. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor’s Office.

According to the inventory database reports and maps, 30 of the Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in a Flood Hazard Area (1 with a Hazard Score of 3, 2 with a Hazard Score of 2, and 27 with a Hazard Score of 1), with a total value of \$99,571,973 (see GMIS Critical Facilities Inventory Database Reports contained in Appendix F and maps contained in Appendix A).

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia’s GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000.

Many individuals do not have access to transportation and thus are susceptible to weather hazards. It is very important to notify these individuals through weather radios, radio stations, and other means so that they may seek shelter and/or make arrangements for transportation to shelter facilities. Therefore, a major consideration should be helping individuals, government, and non-profit organizations prepare for the pending flood hazard events.

The GMIS reports do not list any Repetitive Loss/NFIP properties in Bacon County or the City of Alma.

E. Land Use and Development Trends Related to Floods:

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The river corridors are protected through zoning in the 100-year floodplain and up to 25 feet from the rested edge of the river. Wetland areas are protected by Corps of Engineers permitting requirements. Soil and Sedimentation Control Ordinances are in effect.

Bacon County and the City of Alma are members of the National Flood Insurance Program. The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

F. Multi-Jurisdictional Flood Differences:

Both local governments have some part of their jurisdiction located within a floodplain. As mentioned above, according to GIS analysis conducted by SGRC Staff, 8.1 percent of the area of Bacon County is within a flood zone, and 10.2 percent of the City of Alma is within a flood zone.

As mentioned earlier, the City of Alma has a zoning ordinance and currently operates in compliance with the standards of the 2012 International Building Code. Unincorporated Bacon County currently does not have a building inspection program or zoning.

G. General Overall HRV Summary of Flood Events And their Impact On the Community:

Floods have the potential to cause damage in any flood-prone area, at any time throughout Bacon County and the City of Alma. Of course, the cost of the damage and potential loss of life may be higher if the Flood were to occur in more densely populated areas. Damage caused by flooding can vary depending on the amount of flooding and severity, among other factors. Since the previous plan was completed, there have not been any changes in development that would affect the community's overall vulnerability to this hazard.

The Bacon County HMPUC recognizes Floods as the most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen Floods impact on Bacon County and the City of Alma. These are contained in Chapter 4, Section I.

Bacon County and the City of Alma completed a comprehensive mapping of the community's environmentally sensitive areas and performed a historic resource survey within the community. Since the previous plan was approved, there are no new changes that would increase or decrease the community's overall vulnerability to this hazard.

Section II. Thunderstorms and Wind

A. Identification of Hazard:

The threat of thunderstorms and wind has been chosen by the Bacon County HMPUC as the second most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F) as well as from local history and personal accounts, in order to determine frequency of events.

In addition, hazard maps generated by The GMIS Critical Facilities Inventory for wind (see Appendix A Section II) were examined. The values on the map come from the predictive model of the GEMA database.

Thunderstorms and wind have the potential to be destructive and may occur at any time. Thunderstorms may develop quickly in Bacon County and the City of Alma due to inclement weather conditions, a passing front, or hurricane/tropical storm events. Wind events may occur on their own, due to inclement weather, as a result of a passing front, or as part of thunderstorm or hurricane/tropical storm events.

Thunderstorms are one of the most common weather products of our atmosphere and should not be underestimated. They can cause serious injury, substantial property damage, and even death. Dangers associated with thunderstorms include lightning, hail, heavy rain, flooding, and strong winds. Wind speeds in a thunderstorm can exceed 100 mph and can be as damaging as a tornado. Lightning associated with these events may be one of the leading causes of wildfire in Bacon County. Lightning can also occur even if it is not raining.

NOAA Types of Thunderstorms:

THE SINGLE CELL STORM:

Single cell thunderstorms usually last from 20 to 30 minutes. A true single cell storm is actually quite rare because often the gust front of one cell triggers the growth of another.

Most single cell storms are not usually severe. However, it is possible for a single cell storm to produce a brief severe weather event. When this happens, it is called a pulse severe storm. Their updrafts and downdrafts are slightly stronger, and typically produce hail that barely reaches severe limits and/or brief [microbursts](#) (a strong downdraft of air that hits the ground and spreads

out). Brief heavy rainfall and occasionally a weak tornado are possible. Though pulse severe storms tend to form in more unstable environments than a non-severe single cell storm, they are usually poorly organized and seem to occur at random times and locations, making them difficult to forecast.

THE MULTICELL CLUSTER STORM:

The multicell cluster is the most common type of thunderstorm. The multicell cluster consists of a group of cells, moving along as one unit, with each cell in a different phase of the thunderstorm life cycle. Mature cells are usually found at the center of the cluster with dissipating cells at the downwind edge of the cluster.

Multicell Cluster storms can produce moderate size hail, flash floods and weak tornadoes.

Each cell in a multicell cluster lasts only about 20 minutes; the multicell cluster itself may persist for several hours. This type of storm is usually more intense than a single cell storm, but is much weaker than a supercell storm.

THE MULTICELL LINE STORM (SQUALL LINE):

The multicell line storm, or squall line, consists of a long line of storms with a continuous well-developed gust front at the leading edge of the line. The line of storms can be solid, or there can be gaps and breaks in the line.

Squall lines can produce hail up to golf-ball size, heavy rainfall, and weak tornadoes, but they are best known as the producers of strong downdrafts. Occasionally, a strong [downburst](#) will accelerate a portion of the squall line ahead of the rest of the line. This produces what is called a [bow echo](#). Bow echoes can develop with isolated cells as well as squall lines. Bow echoes are easily detected on radar but are difficult to observe visually.

THE SUPERCELL STORM:

The supercell is a highly organized thunderstorm. Supercells are rare, but pose a high threat to life and property. A supercell is similar to the single-cell storm because they both have one main updraft. The difference in the updraft of a supercell is that the updraft is extremely strong, reaching estimated speeds of 150-175 miles per hour. The main characteristic which sets the supercell apart from the other thunderstorm types is the presence of rotation. The rotating updraft of a supercell (called a [mesocyclone](#) when visible on radar) helps the supercell to produce extreme severe weather events, such as giant hail (more than 2 inches in diameter, strong downbursts of 80 miles an hour or more, and strong to violent tornadoes.

The surrounding environment is a big factor in the organization of a supercell. Winds are coming from different directions to cause the rotation. And, as precipitation is produced in the updraft, the strong upper-level winds blow the precipitation downwind. Hardly any precipitation falls back down through the updraft, so the storm can survive for long periods of time.

The leading edge of the precipitation from a supercell is usually light rain. Heavier rain falls closer to the updraft with torrential rain and/or large hail immediately north and east of the main updraft. The area near the main updraft (typically towards the rear of the storm) is the preferred area for severe weather formation.

Most thunderstorm and wind events in Bacon County and the City of Alma are relatively minimal, typically lasting about 30 minutes. However, there is also the possibility of longer-duration thunderstorms and wind events associated with hurricane/tropical storm events or passing fronts. Thunderstorms and wind events can occur at any time, but are most likely to occur in the afternoon and evening hours in the spring and summer.

B. Profile of Thunderstorm and Wind Events, Frequency of Occurrences, Probability:

The historic record for thunderstorms and wind is spotty at best, with many unreported or underreported events. All of Bacon County and the City of Alma are vulnerable to thunderstorms and wind due to their unpredictability and random occurrences, but the effects, if any, are usually minimal.

Members of the Bacon County HMPUC have witnessed many unreported and underreported cases of minimal to severe thunderstorm and wind events occurring within Bacon County and the City of Alma.

Beaufort Wind Scale Developed in 1805 by Sir Francis Beaufort of England

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft. taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft., whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft., white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (18-25 ft.) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (29-41 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft.) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

Source: NOAA

According to National Climatic Data Center information (NCDC), there were 70 total recorded thunderstorm/ wind events reported in Bacon County, with 67 of them having occurred in the last 50 years, between Jan 1, 1967 and Dec. 31, 2016. Two injuries were reported, both in an event that took place in 1991. Total property damage was reported as \$104,000. Damage included downed trees, power losses in certain areas, and roof damage. The events involved wind speeds between 45 and 61 knots. Since the previous Hazard Mitigation Plan was completed, according

to NCDC data, there have been 16 Thunderstorm/Wind events with a total reported property damage of \$3,000 and no injuries or fatalities.

The Historic Recurrence Interval is 0.94 years. This is a 106.06% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 2.7, the past 20-year frequency is 2.45, and the past 50-year frequency is 1.34 (see GEMA PDM Hazard Frequencies Table contained in Appendix D Section I).

All of Bacon County has the same design wind speed of 200 miles per hour for a 3-second gust, as determined by the American Society of Civil Engineers (ASCE). In addition, Bacon County is in a special Hurricane Susceptible Region (see Appendix A).

According to www.gema.ga.gov, the MEOW (Maximum Envelope of Wind) for a Georgia Coast Landfall for Bacon County ranges from 39-57 mph in the county (for a Category 1 hurricane with sustained winds of 75 mph and forward speed of 9 mph) to 109-126 mph in the eastern 1/3 of the county and 92-108 mph in the western 2/3 of the county (for a Category 4 hurricane with sustained winds of 144 mph and forward speed of 25 mph).

100% of Bacon County and the City of Alma are included in some wind hazard area. As shown on the wind hazard map (see Appendix A, Section II), approximately the western two-thirds of Bacon County (including the City of Alma) is within the 90-99 mph wind speed area, and approximately the eastern third of Bacon County is within the 100-109 mph wind speed area. These wind speed areas correspond to basic wind speeds for a 3-second gust with a 50-year return interval, contained in the 2012 International Building Code.

Since the previous plan was completed, notable thunderstorm/wind events have occurred in 2016 due to Hurricane Hermine and Hurricane Matthew. However, since the previous plan was completed, no changes have occurred that would affect the community's overall vulnerability to this hazard.

C./D. Inventory of Assets Exposed and Potential Loss to Thunderstorms and Wind:

The threat of thunderstorms and wind is a constant in Bacon County and the City of Alma due to the unpredictability and random occurrence of the hazard. When and where they will occur and the potential damage that they will cause is not easy to predict.

In GEMA Worksheet 3A: Inventory of Assets (appearing in Appendix A Section II), we estimate that all of Bacon County and the City of Alma are vulnerable to thunderstorms and wind. Property values were provided by the Bacon County Tax Assessor's Office using the most recent data available.

Approximately 100% of the Residential property (3,931 of 3,931) in Bacon County (which includes the Residential property in the City of Alma) may be affected, with a total value of \$207,940,361. Also approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (1,262 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total

value of \$283,130,785. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 115 Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in areas that may be affected by thunderstorms and wind. All facilities are located in areas with a Wind Hazard Score of 2 (90-99 mph). The total value of these 115 Critical Facilities is \$410,494,980, as well as a content value of \$31,024,007.

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia's GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000.

E. Land Use and Development Trends Related to Thunderstorms and Wind:

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is requested from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not. No other trends regarding the relationship between land use/development and thunderstorm/wind hazards have been identified at this time.

F. Multi-Jurisdictional Thunderstorm and Wind Differences:

All of Bacon County and the City of Alma may be equally affected by thunderstorms and wind. No differences between the two jurisdictions in this regard have been determined.

G. Overall HRV Summary of Thunderstorm/Wind Events And their Impact On The Community:

Thunderstorms and wind have the potential to cause damage at any place, at any time, throughout Bacon County and the City of Alma. Of course, the cost of the damage and potential loss of life may be higher if thunderstorms and wind occur in populated areas and municipalities, as opposed to if they were to occur in more rural sections of Bacon County. A majority of the thunderstorms and wind that pass through the area, however, cause minimal to no damage.

The Bacon County HMPUC recognizes thunderstorms and wind as the second most likely natural hazard to occur and cause damage. They have developed a comprehensive range of

Mitigation Goals, Objectives, and Action Steps to lessen thunderstorm and wind impact on Bacon County and the City of Alma. These are contained in Chapter 4 Section II.

Since the previous plan was approved, there have not been any new developments, regulations, or programs that would either increase or decrease the community's overall vulnerability to this hazard.

Section III. Wildfire

A. Identification of Hazard:

The threat of wildfire has been chosen by the Bacon County HMPUC as the third most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA described methodology, and other factors.

Historic data have been examined from various sources (see Appendix A Section III) and from the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine the frequency of events.

In addition, hazard maps generated by The GMIS Critical Facilities Inventory for wildfire (see Appendix A Section III) were examined. Complete inventory information is contained at <https://www.itos.uga.edu/gema>. These map values come from the predicted model of the GEMA database.

Nationwide, approximately 80 percent of wildfires are caused by people. Smoking in forested areas and improperly extinguishing campfires are two common causes of wildfire. Lightning is also a major igniter of fires. Between 1960 and 2015, according to the National Interagency Fire Center (www.nifc.gov), an average of 4.5 million acres each year were burned in wildfires in the United States. Over 10 million acres burned in 2015 alone in the U.S. Although wildfires occur naturally and serve important functions for forest ecosystems, they also present a danger to human life and property. In Bacon County, where a significant portion of the land is used for forestry, wildfires can have an economic impact. At the same time, periodic controlled burns may be necessary to maintain healthy forest ecosystems.

Low humidity, lack of recent precipitation (or drought conditions), wind speed, and temperature are a combination of weather conditions that favor the kindling and spread of forest or brush fires. Dead fuel moisture, in combination with the above, also provides for the kindling and spread of forest or brush fires. Much of Bacon County and some areas in and near the City of Alma are wooded with commercial and free-growing pine trees and other trees. These trees can and do catch fire frequently in both small and large fire events.

Wildfires often begin unnoticed. They spread quickly and can change direction rapidly, igniting brush, trees, and homes. Also, fire may smolder for weeks at a time in the underbrush and then ignite some distance away from where it started, resisting efforts to eradicate it and spreading quickly throughout the area. Surface fires are the most common type of wildfires, moving slowly and burning along the forest floor, killing and damaging vegetation. Ground Fires, another type, are usually started by lightning and burn on or below the forest floor through the root systems. The final type, Crown Fires, spread by wind moving quickly along the tops of trees.

B. Profile of Wildfire Events, Frequency of Occurrences, Probability:

The historic record for minor to major wildfire is spotty at best, with many unreported or underreported events. All of Bacon County and the City of Alma are vulnerable to wildfires due to their unpredictability and random occurrences. The effects can range from minimal damage to severe and widespread damage. Wildfires can occur at any time of the year.

Members of the Bacon County HMPUC have witnessed many unreported and underreported cases of minor to major wildfire events occurring in Bacon County and the City of Alma, some lasting for days, weeks, or months at a time.

According to the Georgia Forestry Commission, the leading causes of these fires was debris burning (44%) and Incendiary or Arson (21%). Over the past five years, 50% of debris fires originated from escapes from household or residential debris burning.

In Bacon County in 2011, a drought year, 102 wildfires with an average of 220 acres burned were reported; at the end of fiscal year 2013, considered a wet year, 26 wildfires with an average of 4 acres burned were reported. The median for these two extremes are 64 wildfires with an average of 112 acres burned. This would represent what the community might be able to expect in future years. Another major wildfire event occurred on July 28, 2014.

In Bacon County (including the City of Alma), with the best available information, we have recorded an average of 65 wildland fires per year in 50 years, with a Historic Recurrence Interval of 0.02 years. This is a 6500% Historic Frequency Chance per year. The past ten-year Record Frequency Per Year is 65.0, the past 20-year frequency is 65.0 and the past 50-year frequency is 65.0 (see GEMA PDM Hazard Frequencies Table contained in Appendix D Section I). To the best of our knowledge, approximately 325 wildfire events have occurred in Bacon County (including the City of Alma) since the previous Hazard Mitigation Plan was adopted.

Most of Bacon County has a wildfire hazard score of 1. Some areas throughout the county have a score of 0. Limited areas around the central area of the county, especially around the north side of the City of Alma, have a hazard score of 2. No areas have a score higher than 2. A map of wildfire hazard areas with critical facilities is shown in Appendix A and the Community Wildfire Protection Plan is included in Appendix C.

The Bacon County Fire Department and the Georgia Forestry Commission in their “Community Wildfire Protection Plan” (see Appendix C Section I) has determined through Hazard ratings that the following areas have a Low, Moderate or High level of probability concerning wildfire:

City of Alma (Low)
Bennett Still (Moderate)
New Lacy (High)
Warnock (High)
Sessoms (Extreme)
Taylortown (Extreme)
Ware (Extreme)

As can be seen from the above information, there are several sources of information that have different determinations of wildfire risks although all place certain areas of Bacon County and the City of Alma within wildfire hazard areas.

Since the previous plan was completed, no changes have occurred that would affect the community's overall vulnerability to this hazard.

C./D. Inventory of Assets Exposed and Potential Loss to Wildfire:

From a fire management perspective, the Wildland-Urban Interface (WUI) is commonly defined as an area where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. As fire is dependent on a certain set of conditions, the National Wildfire Coordinating Group has defined the wildland-urban interface as a set of conditions that exists in or near areas of wildland fuels, regardless of ownership. This set of conditions includes type of vegetation, building construction, accessibility, lot size, topography and other factors such as weather and humidity. When these conditions are present in certain combinations, they make some communities more vulnerable to wildfire damage than others. This "set of conditions" method is perhaps the best way to define wildland-urban interface areas when planning for wildfire prevention, mitigation, and protection activities.

There are three major categories of wildland-urban interface. Depending on the set of conditions present, any of these areas may be at risk from wildfire. A wildfire risk assessment can determine the level of risk. These three categories are:

- 1) "Boundary" Wildland-Urban Interface is characterized by areas of development where homes, especially new subdivision, press against the public and private wildlands, such as private or commercial forest land or public forests or parks. This is the classic type of wildland-urban interface, with a clearly defined boundary between the suburban fringe and the rural countryside.
- 2) "Intermix" Wildland-Urban Interface areas are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just beginning to go through the transition from rural to urban land use.
- 3) "Island" Wildland-Urban Interface, also called occluded interface, are areas of wildland within predominantly urban or suburban areas. As cities or subdivisions grow, islands of undeveloped land may remain, creating remnant forests. Sometimes these remnants exist as parks, or as land that cannot be developed due to site limitations, such as wetlands.

Approximately 75% of Critical Facilities are in a wildfire hazard area (i.e. an area with a wildfire hazard score of 1 or 2; no areas have higher scores in Bacon County and Alma). This 75% figure has been extrapolated as an estimate for all properties in the community. Therefore, it is estimated that 75% of Residential property (2,948 of 3,931) in Bacon County (which includes the Residential properties in the City of Alma) may be affected, with a total value of \$155,955,271. Also, approximately 75% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (949 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$212,348,089.

In addition, 88 of the Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in wildfire hazard areas. 64 Critical Facilities have a wildfire hazard score of 2, and 24 facilities have a wildfire hazard score of 1. The total value of critical facilities within a wildfire hazard area is \$306,265,793, with a value of \$176,192,561 in areas with a hazard score of 2 and \$130,073,232 in areas with a hazard score of 1 (see table 2.3 below as well as the GMIS Critical Facilities Inventory Database Reports contained in Appendix F and maps contained in Appendix A).

Jurisdiction:	Wildfire Hazard Score 1	Wildfire Hazard Score 2	Totals:
City of Alma – Number of Facilities:	9	59	68
Total Value:	\$95,007,168	\$139,608,980	\$234,616,148
Bacon County – Number of Facilities:	15	5	20
Total Value:	\$35,066,064	\$36,583,581	\$71,649,645
Total – Number of Facilities:	24	64	88
Total Value:	\$130,073,232	\$176,192,561	\$306,265,793

Table 2.3: Critical Facilities by Wildfire Hazard Zone (data source: GMIS, Bacon County, City of Alma)

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia’s GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000.

E. Land Use and Development Trends Related to Wildfire:

Development continues to take place in Bacon County and the City of Alma, with a large amount of new construction taking place in areas bordered by pine tree production and other naturally growing trees. More and more people are making their homes in woodland settings in or near forest or in rural areas. These homeowners enjoy the beauty of the environment, but face the real danger of wildfires. This is not a new phenomenon, but has always been the case. The trend is for this is to continue.

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

Georgia law requires that a permit be issued for most types of outdoor burning. To request a permit, users can contact the local Georgia Forestry Commission or visit www.gatrees.org to apply online. If conditions are favorable for burning, a permit will be granted. According to Georgia law, burning without a permit is a misdemeanor punishable by fines up to \$1,000.

F. Multi-Jurisdictional Wildfire differences:

Virtually all of Bacon County and the City of Alma may be affected by wildfire. Geographical differences are not so much dependent on jurisdiction, as on land use and fire district resources. The Alma-Bacon County Main Fire Station is staffed by a paid force. Six Fire Department properties in Bacon County are staffed by volunteers. The following are the ISO classes of fire districts in the community:

Station 1: Alma-Bacon County Main:	Class 4
Station 2: Bennett Still:	Class 4
Station 3: New Lacey:	Class 4
Station 4 Sessoms:	Class 4
Station 5: Taylor Town:	Class 4
Station 6: Ware:	Class 4
Station 7: Warnock:	Class 4

G. General Overall HRV Summary of Wildfire Events And their Impact On The Community:

Wildfire has the potential to cause damage in any wildfire-prone area, at any time, throughout Bacon County and the City of Alma. The cost of the damage and the potential loss of life may be higher if a wildfire occurs in the more densely populated areas. The effects could range from minimal damage to severe and widespread damage. Wildfires can occur at any time of the year.

The Bacon County HMPUC recognized wildfire as the third most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen wildfire impact on Bacon County and the City of Alma, which are contained in Chapter 4, Section III.

Bacon County and the City of Alma have completed a comprehensive mapping of the community’s environmentally sensitive areas and performed a historic resource survey within the community. The County and City have completed their Community Wildfire Protection Plan, which contains goals and objectives to decrease the community’s overall vulnerability to this hazard. Since the previous plan was approved, there are no new changes in development within the community that would increase or decrease the community’s overall vulnerability to this hazard.

Section IV. Drought

A. Identification of Hazard:

The threat of a drought has been chosen by the Bacon County HMPUC as the fourth most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. In addition, hazard maps generated by The GMIS Critical Facilities Inventory were examined.

What is known as drought is usually the result of several factors that come together to gradually increase dry conditions in the community until they reach a severe and extreme level. These factors could be related to weather patterns, lack of rainfall, wind conditions, lack of water from rivers and upstream areas, or other factors.

Although drought is usually associated with the summer months due to its more visible effects, it can occur at any time and its effects can last throughout the year and continue from year to year. These effects may range from agricultural losses, to increased wildfire and fire risk, to lack of water for citizens and firefighting, to increased flooding risk (because dry land can be less absorbent of rainfall), as well as other effects that influence other hazards and the safety of the community.

Crops (including trees) are usually most adversely affected by drought events, along with community residents whose water supplies are restricted or cut off (especially those using individual wells). Many residents of Bacon County and the City of Alma have shallow wells which often go dry during drought periods, thus leaving those residents without water for extended periods of time.

The ***Palmer Z Index*** measures short-term drought on a monthly scale. The ***Palmer Crop Moisture Index (CMI)*** measures short-term drought on a weekly scale and is used to quantify drought's impacts on agriculture during the growing season.

The ***Palmer Drought Severity Index (PDSI)*** (known operationally as the ***Palmer Drought Index (PDI)***) attempts to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Since weather patterns can change practically overnight from a long-term drought pattern to a long-term wet pattern, the PDSI (PDI) can respond fairly rapidly.

The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop and it takes longer to recover from them. The ***Palmer Hydrological Drought Index (PHDI)***, another long-term drought index, was developed to quantify these hydrological effects. The PHDI responds more slowly to changing conditions than the PDSI (PDI).

The U.S. Drought Monitor (<http://droughtmonitor.unl.edu>) is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration and has been used to determine some of information in this section.

The U.S. Drought Monitor utilizes a variety of sources, including the Palmer Index(s), to rate an area as D0 (Abnormally Dry), D1 (Moderate Drought), D2 (Severe Drought), D3 (Extreme Drought) and D4 (Exceptional Drought). Any area rated at D0 or above was considered to be in a drought for the purposes of this plan.

There have been cases in Bacon County and the City of Alma where some level of drought conditions have persisted for years in a row.

B. Profile of Drought Events, Frequency of Occurrences, Probability:

The historic record for drought is spotty at best, especially prior to the year 2000, with many unreported or underreported drought events. All of Bacon County and the City of Alma are vulnerable to drought due its unpredictability and widespread coverage. The effects vary depending on the severity of the drought and the length of time that it has occurred. Members of the Bacon County HMPUC have witnessed many unreported and underreported cases of drought events occurring within Bacon County and the City of Alma.

According to National Climatic Data Center information (see Appendix G), there was 1 report of drought occurring in Bacon County (including the City of Alma) between 01/01/1950 and 12/31/2016. However, the U.S. Drought Monitor (<http://droughtmonitor.unl.edu>) offers more complete data, reporting that some level of drought occurred in Bacon County in the majority of years between 2000 and 2016. According to the U.S. Drought Monitor, a total of 508 drought events occurred from 2000 to 2016. The historic recurrence interval is 0.03, and the historic frequency chance per year is 3175.00%. The past 10-year record frequency per year is 30.8, the 20-year frequency is 25.4, and the 50-year frequency is 10.16. (However, it should be noted that no drought events are recorded prior to the year 2000 in the available data.) While most of these events were D0 (Abnormally Dry) and D1 (Moderate Drought), there were D4 events (Exceptional Drought) reported in January and February of 2012, as well as D3 events (Extreme Drought) in 2000, 2007, 2011, and 2012 and many years with some instance of D2 events (Severe Drought).

Since the previous plan was completed, no changes have occurred that would affect the community's overall vulnerability to this hazard.

C./D. Inventory of Assets Exposed and Potential Loss to Drought:

The threat of a drought is a constant in Bacon County and the City of Alma due to the unpredictability and widespread coverage of the hazard. Drought events tend to be area-wide and will likely not be limited to certain areas of the community, although the effect on residents will depend on the infrastructure and services available (for example, the depth of wells).

Approximately 100% of the Residential property (3,931 of 3,931) in Bacon County (which includes the Residential property in the City of Alma) may be affected, with a total value of \$207,940,361. Also approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (1,262 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$283,130,785. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 115 Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in areas that may be affected by drought. The total value of these 115 Critical Facilities is \$410,494,980, as well as a content value of \$31,024,007.

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia's GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000. Agricultural production, especially the blueberry harvest, is the most important sector of the Bacon County/Alma economy. This economic asset is particularly vulnerable to drought due to the potential reduction in crop harvest that a drought could cause.

E. Land Use and Development Trends Related to Drought:

The dry conditions caused by drought can be conducive to a further hazard covered in this Plan, namely wildfire. During periods of drought, the community must be on high alert for wildfire hazards. This hazard is exacerbated due to the fact that new construction in Bacon County and the City of Alma continues to take place in areas bordered by pine tree production and other naturally growing trees. These homeowners enjoy the beauty of the environment, but face the real danger of wildfires. This is not a new phenomenon, but has always been the case. The trend is for this is to continue. For more specific information, see Chapter 2, Section III (Wildfire).

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

F. Multi-Jurisdictional Drought Differences:

Due to the area-wide nature of drought events, all of Bacon County and the City of Alma are at equal risk. However, households in unincorporated Bacon County are served by well water while the City of Alma operates its own water and sewer systems. According to the City website (http://www.cityofalmaga.gov/public_works/water_and_sewer_division.php), the City of Alma is permitted to withdraw up to 1.5 million gallons per day. Due to the capacity of the municipal water system, it is predicted that households in the City of Alma will be better protected from drought-related water shortages than households in the unincorporated county, which must rely

on their own local wells for water. Data regarding the depth of individual wells are not currently available.

G. General Overall HRV Summary of Drought Events And their Impact On The Community:

Drought has the potential to cause damage at any place, at any time, throughout Bacon County and the City of Alma. The cost of the damage may be higher if the drought occurs at certain critical times of the year that would exacerbate its impact on agricultural production, especially the blueberry harvest.

The Bacon County HMPUC recognizes drought as the fourth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen the impact of drought on Bacon County and the City of Alma. These are contained in Chapter 4 Section IV. Due to continued population growth, increased water usage has the potential to put a strain on the municipal water system and on public and private wells, which can become dry under drought conditions. Since the previous plan was approved, there are no new changes in development within the community that would increase or decrease the community's overall vulnerability to this hazard.

Section V. Tornado

A. Identification of Hazard:

The threat of a tornado has been chosen by the Bacon County HMPUC as the fifth most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA-described methodology and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine the frequency of events. For further information, see the HAZUS Report in Appendix G.

A tornado is a violently rotating column of air extending to the ground. Tornadoes are one of nature’s most destructive forces. Tornadoes can generate wind speeds of up to 318 miles per hour. A tornado’s damage path can be more than a mile wide and fifty miles in length.

ENHANCED FUJITA WIND DAMAGE SCALE

Number	Wind Speed	Damage
EF-0	65 To 85 mph	Light damage. Some damage chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
EF-1	86 mph to 110 mph	Moderate Damage., The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF-2	111 mph to 135 mph	Significant Damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; high rise windows broken and blown in; light-object missiles generated.
EF-3	136 mph to 165 mph	Severe Damage. Roofs and walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
EF-4	166 mph to 200 mph	Devastating, damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
EF-5	Above 200 mph	Incredible, damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 m (109 yards); trees debarked; steel reinforced concrete structures badly damaged.

Tornadoes may occur at any time of year and may develop quickly. Tornadoes can occur due to inclement weather conditions, as a result of a passing front, or as part of thunderstorm or hurricane/tropical storm events. Tornado season in Georgia is typically from March through August. Tornadoes are most likely to occur between 3:00 p.m. and 9:00 p.m. Hurricane/tropical cyclone season (June 1 to November 30th) is another time during which tornadoes are more likely to occur. The path and severity of a tornado cannot be determined in advance. The best defense is to heed tornado warnings and seek appropriate shelter when a tornado has been sighted in the area or when conditions conducive to a tornado are present.

B. Profile of Tornado Events, Frequency of Occurrences, Probability:

The historic record for tornadoes is spotty at best with many unreported or underreported tornado events. All of Bacon County and the City of Alma are vulnerable to tornadoes due to their unpredictability and random occurrences. The effects of this hazard are usually substantial and occur with little to no warning. Members of the Bacon County HMPUC have witnessed many unreported and underreported cases of tornado events occurring within Bacon County and the City of Alma.

According to National Climatic Data Center information (see Appendix F), there are 18 reports of tornadoes occurring in Bacon County (including the City of Alma) between 01/01/1957 and 12/31/2016. Of these, there were at least seven cases that were considered major events with property damage valued at between \$10,000 and \$3,000,000. Damage included downed trees, damaged buildings and vehicles, power outages, and some homes entirely destroyed. The most costly event (\$3 million) occurred on 12/2/2009 when an EF-1 tornado struck the community of Sessoms Station. However, no injuries were reported from this event. Since the previous Hazard Mitigation Plan was completed, there has been one tornado event, on January 4, 2015, when an EF-1 tornado struck the Rockingham community, resulting in 2 injuries.

The Historic Recurrence Interval for tornadoes is 3.67 years. This is a 27.27% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.3, the past 20-year frequency is 0.55, and the 50-year frequency is 0.3 (See GEMA PDM Hazard Frequencies Table contained in Appendix D Section I).

Since the previous plan was completed, no changes have occurred that would affect the community's overall vulnerability to this hazard.

C./D.: Inventory of Assets Exposed and Potential Loss to Tornadoes:

The threat of tornadoes is a constant in Bacon County and the City of Alma due to their unpredictability and random occurrence. In GEMA Worksheet 3A: Inventory of Assets, appearing in Appendix A, Section V, we estimate that all of Bacon County and the City of Alma are equally vulnerable to tornadoes.

Approximately 100% of the Residential property (3,931 of 3,931) in Bacon County (which includes the Residential property in the City of Alma) may be affected, with a total value of \$207,940,361. Also approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (1,262 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$283,130,785. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 115 Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in areas that may be

affected by tornadoes. The total value of these 115 Critical Facilities is \$410,494,980, as well as a content value of \$31,024,007.

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia's GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000.

E. Land Use and Development Trends Related to Tornadoes

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

No other land use and development trends related to tornadoes have been identified at this time.

F. Multi-Jurisdictional Tornado Differences:

All of Bacon County and the City of Alma may be equally affected by tornadoes. No differences in hazard level between the two jurisdictions have been identified. However, due to the higher population density within the City of Alma, a direct hit from a powerful tornado in that area would likely cause more damage and casualties than in the less populous areas of unincorporated Bacon County.

G. General Overall HRV Summary of Tornado Events And their Impact On The Community:

Tornadoes have the potential to cause damage at any place, at any time, throughout Bacon County and the City of Alma. The cost of the damage and potential loss of life may be higher if the tornado occurs in a more densely populated areas as opposed to a sparsely populated or unpopulated area. Most tornadoes do cause substantial damage.

The Bacon County HMPUC recognizes tornadoes as the fifth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen the impact of tornadoes on Bacon County and the City of Alma. These are contained in Chapter 4 Section V. Since the previous plan was approved, there are no new changes that would increase or decrease the community's overall vulnerability to this hazard.

Section VI. Hurricanes/Tropical Storms

A. Identification of Hazard:

The threat of hurricanes/tropical storms has been chosen by the Bacon County HMPUC as the sixth most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events. For further information, see the HAZUS Report in Appendix G.

Tropical Cyclones are the general term used for all circulating weather systems over tropical water. Tropical Cyclones are destructive and have the potential to cause great damage and loss of life. They are divided into four major types: Tropical Disturbances, Tropical Depressions, Tropical Storms, and Hurricanes.

A tropical disturbance is a discrete tropical weather system of apparently organized convection originating in the tropics or subtropics, having a non-frontal migratory character, and maintaining its identity for 24 hours or more.

A tropical depression is defined as an organized system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph.

A tropical storm is defined as an organized system of strong thunderstorms with a defined circulation and maximum sustained winds of 39 to 73 mph.

A hurricane is defined as an intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph or higher. Hurricanes are categorized as Category 1 through Category 5, as described in the table below.

SAFFIR-SIMPSON HURRICANE SCALE

<i>Category</i>	<i>Wind Speed</i>	<i>Damage</i>
1	74-95 mph	Minimal, no real damage to building structures. Unanchored mobile homes, shrubbery and trees damaged. Also some coastal road flooding and minor pier damage.
2	96-110 mph	Moderate, some damage to roofs, door and windows. Considerable damage to vegetation, mobile homes and piers.
3	111-130 mph	Extensive, some structural damage to small residences and utility buildings. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris.
4	131-155 mph	Extreme, some complete roof failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore.
5	>155 mph	Catastrophic, complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away.

Hurricane/tropical storm season in Georgia is officially from June 1 through November 30, but they may occur slightly before or after those dates.

Whether the hurricane/tropical storm is a short-term event or a long term event depends on many factors including category, strength, speed, and impact of other weather systems, including fronts and wind patterns.

Because of their location, Bacon County and the City of Alma are vulnerable to severe hurricanes/tropical storms forming in both the Atlantic Ocean and the Gulf of Mexico. Also due to location, Hurricanes may degrade into Tropical storms, tropical depressions or tropical disturbances by the time they reach Bacon County and the City of Alma. These may or may not contain tornadoes or hail. In some cases, tropical storms, depressions, or disturbances may never reach hurricane strength before reaching the shore. The effects vary depending on the severity of the hurricane/tropical storm and the duration of the event.

B. Profile of Hurricane/Tropical Storm Events, Frequency of Occurrences, Probability:

The historic record for hurricanes/tropical storms is spotty at best, with many unreported and underreported events. All of Bacon County and the City of Alma are vulnerable to hurricanes/tropical storms due to their proximity to the coasts of both the Atlantic Ocean and the Gulf of Mexico. The effects of the hazard are usually substantial.

Members of the Bacon County HMPUC have witnessed many unreported and underreported tropical events occurring in Bacon County and the City of Alma. Some hurricane/tropical storm events over the past 100 years appear on several websites (See Appendix A Section VI Part C), but in most cases it is not clear of the exact dates or names of those events.

According to National Climatic Data Center information (see Appendix F), there are 4 reports of tropical storms occurring in Bacon County (including the City of Alma) between 01/01/1997 and 12/31/2016. Of these, no cases were considered major events. The total cost of damage reported has been \$0. Total injuries have been reported as zero. The Historic Recurrence Interval is 16.5 years. This is a 6.06% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.4, the past 20-year frequency is 0.2, and the past 50-year frequency is 0.08 (see PDM Hazard Frequencies Table contained in Appendix D Section I).

Recently, during the development of this Plan, Bacon County and the City of Alma were significantly affected by Hurricane Hermine in September 2016 and by Hurricane Matthew in October 2016. These 2 events are the only hurricanes/tropical storms that Bacon County and the City of Alma have experienced during the past 5 years.

All of Bacon County has the same design wind speed of 200 miles per hour for a three-second gust as determined by the American Society of Civil Engineers (ASCE), plus it is in a special Hurricane Susceptible Region (see Appendix A Section VI Part C).

According to www.gema.ga.gov, the MEOW (Maximum Envelope of Wind) for a Georgia Coast Landfall for Bacon County ranges from 39-57 mph in the county (for a Category 1 hurricane

with sustained winds of 75 mph and forward speed of 9 mph) to 109-126 mph in the eastern 1/3 of the county and 92-108 mph in the western 2/3 of the county (for a Category 4 hurricane with sustained winds of 144 mph and forward speed of 25 mph).

The GMIS Critical Facilities Inventory does not address hurricanes/ tropical storms but does address wind (see Appendix A). This model has determined that all of Bacon County and the City of Alma are all within the wind hazard area. This model also attempts to determine certain wind speed areas for the hazard of wind, and has identified wind speeds of 90 to 99 mph and 100 to 109 mph exist. 100% of Bacon County and the City of Alma are included in some wind hazard area. Complete inventory information is contained at <https://www.itos.uga.edu/gema>.

Since the previous plan was completed, no changes have occurred that would affect the community's overall vulnerability to this hazard.

C./D.: Inventory of Assets Exposed and Potential Loss to Hurricanes/Tropical Storms:

In Worksheet 3A: Inventory of Assets appearing in Appendix A, Section VI, we estimate that all of Bacon County and the City of Alma are equally vulnerable to hurricanes/tropical storms.

Approximately 100% of the Residential property (3,931 of 3,931) in Bacon County (which includes the Residential property in the City of Alma) may be affected, with a total value of \$207,940,361. Also approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (1,262 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$283,130,785. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 115 Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in areas that may be affected by hurricanes/tropical storms. The total value of these 115 Critical Facilities is \$410,494,980, as well as a content value of \$31,024,007. All facilities are located in areas with a Wind Hazard Score of 2 (90-99 mph).

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia's GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000.

E. Land Use and Development Trends Related to Hurricanes/Tropical Storms:

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

F. Multi-Jurisdictional Hurricane/Tropical Storm Differences:

All of Bacon County and the City of Alma may be affected by hurricanes/tropical storms. Such events are normally area-wide and not difference in the severity is expected between Bacon County and the City of Alma. However, the impact of a hurricane/tropical storm will likely be more severe in places with higher population density due to more people being in danger, more people needing to evacuated, more debris from damaged buildings, and other impacts associated with higher population density.

Bacon County and the City of Alma are both members of the National Flood Insurance Program. Bacon County and the City of Alma do not participate in the Community Rating System (CRS) program. As of 2016, they were not eligible, according to FEMA (<http://www.fema.gov/library/viewRecord.do?id=3629>).

G. General Overall HRV Summary of Hurricanes/Tropical Storms Events And Their Impact On The Community:

Hurricanes/tropical storms have the potential to cause damage at any place, at any time, throughout Bacon County and the City of Alma. They are usually preceded by some watch or warning well in advance. The cost of the damage and potential loss of life may be higher if the path of the hurricanes/tropical storms covers populated areas as opposed to more sparsely populated or unpopulated areas.

The Bacon County HMPUC recognizes hurricanes/tropical storms as the sixth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen hurricane/tropical storm impacts on Bacon County and the City of Alma. These are contained in Chapter 4, Section VI. Since the previous plan was approved, there are no new changes in development within the community that would increase or decrease the community's overall vulnerability to this hazard.

Section VII. Hail

A. Identification of Hazard:

The threat of hail has been chosen by the Bacon County HMPUC as the seventh most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA-described methodology, and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine the frequency of events.

Hail is precipitation in the form of lumps of ice that form in some storms. They are usually round and vary from the size of a grain of millet all the way up to grapefruit size. Hailstones generally form in thunderstorms between currents of rising air called the updraft and the current of air descending toward the ground called the downdraft. Large hailstones indicate strong updrafts in storms. The larger the hail, the stronger the updraft needed to hold it aloft in the storm.

In storms that cause tornadoes, hail often falls directly to the northeast or east of the path of the tornado. The strong updraft is associated with the part of the storm that produces the tornado. Fortunately, hail very rarely kills anyone. However, a couple of dozen people are injured by hailstones each year. The best way to keep safe during a hailstorm is to seek shelter immediately.

Hailstorms cause an enormous amount of damage to property and crops across the U.S. every year. In just two years (1993 and 1994), hail caused over \$500 million in damages. In May 1995, a severe thunderstorm struck the Dallas/Fort Worth metro area, causing between 1 and 2 billion dollars' worth of damage, much of it due to hail and flooding.

Individual hail events, although they can be destructive, tend to be relatively short in duration. They can occur at any time of year, but are more likely to occur during tornado season in Georgia, which is typically from March through August, or during hurricane/tropical storm season, which is typically June 1 through November 30.

B. Profile of Hail Events, Frequency of Occurrences, Probability:

The historic record for hail is spotty at best, with many unreported or underreported hail events. All of Bacon County and the City of Alma are vulnerable to hail due to its unpredictability and random occurrence, but the damage effects, if any, vary with the storm. Members of the Bacon County HMPUC have witnessed many unreported and underreported hail events occurring in Bacon County and the City of Alma.

According to National Climatic Data Center information (see Appendix F), there were 28 reports of hail occurring in Bacon County (including the City of Alma) between 01/01/1996 and 12/31/2016. Of these, only one case was considered a major event, with total damage estimated at \$1,000. Total injuries were reported as zero. Damage estimates do not include losses to agricultural production; it should be noted that in a recent hailstorm, in 2014, an estimated 40 percent of the blueberry crop was damaged.

Of the 28 reports of hail listed above, one was of unknown size, 17 had 0.75 inch hail size, one had 0.88 inch hail size, three had 1” hail size, five had 1.75 inch hail, and one had 2.75 inch hail.

With the best available information, we have recorded 28 hail events in 20 years with a Historic Recurrence Interval of 2.36 years. This is a 42.42% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.8, the past 20-year frequency is 1.35, and the past 50-year frequency is 0.56 (See GEMA PDM Hazard Frequencies Table contained in Appendix D Section I). Since the previous Hazard Mitigation Plan was adopted, only one hail event has occurred, on March 23, 2013.

As evidenced by the data collected, hail storms are infrequent for Bacon County and the City of Alma, and are usually short lived in duration, typically producing .75 inch to .88 inch size hail. This is the size of hailstones that the community might be able to expect in future events.

Since the previous plan was completed, no changes have occurred that would affect the community’s overall vulnerability to this hazard.

C./D.: Inventory of Assets Exposed and Potential Loss to Hail:

The threat of hail is a constant in Bacon County and the City of Alma due to the unpredictability and the random occurrence of the hazard, however it may occur more frequently during tornado season (March through August) or during hurricane/tropical storm season (June 1 through November 30). When and where it will occur and the potential damage that it will cause is not easy to predict. In addition, hail may move randomly from place to place and miss entire areas completely.

Approximately 100% of the Residential property (3,931 of 3,931) in Bacon County (which includes the Residential property in the City of Alma) may be affected, with a total value of \$207,940,361. Also approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (1,262 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$283,130,785. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor’s Office.

According to the inventory database reports and maps, all of the 115 Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in areas that may be affected by hail. The total value of these 115 Critical Facilities is \$410,494,980, as well as a content value of \$31,024,007.

Damage to crops is not taken into account in any of these figures. According to the most recent estimate (2011) available on the University of Georgia’s GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000. Agricultural production, especially the blueberry harvest, is one of the most important parts of the Bacon County/Alma economy. This economic asset is particularly

vulnerable to hail due to the potential reduction in crop harvest that a destructive hail storm could cause.

E. Land Use and Development Trends Related to Hail:

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

No other land use and development trends related to hail have been identified at this time.

F. Multi-Jurisdictional Hail Differences:

All of Bacon County and the City of Alma have an equal chance of being affected by hail. No differences between the two jurisdictions have been identified at this time.

G. General Overall HRV Summary of Hail Events And their Impact On The Community:

Hail has the potential to cause damage at any place, at any time, throughout Bacon County and the City of Alma. The cost of the damage will vary depending on the size and quantity of hailstones and where they land. Damage to vehicles (especially roof dents) is one of the most widespread effects of major hailstorms; injuries to people are rarer but not unheard of. The damage effects of hail, if any, vary with the storm.

The Bacon County HMPUC recognizes hail as the seventh most likely natural hazard to occur and cause damage. They developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen hail impacts on Bacon County and the City of Alma. These are contained in Chapter 4 Section VII.

Since the previous plan was approved, there are no new changes that would increase or decrease the community's overall vulnerability to this hazard.

Section VIII. Severe Winter Storm

A. Identification of Hazard:

The threat of a severe winter storm has been chosen by the Bacon County HMPUC as the eighth most likely hazard to occur and cause damage in Bacon County and the City of Alma, based on past experience, the FEMA-described methodology and other factors. Historic data have been examined from various sources, including the National Climatic Data Center (see Appendix F), as well as from local history and personal accounts, in order to determine frequency of events.

Although this natural hazard did not rank high in any dataset of occurrences or damages happening in Bacon County or the City of Alma, undocumented personal accounts of the Bacon County HMPUC members rated this hazard as likely to occur and cause damage. A major reason for this is the blueberry crop, which is an important part of the Bacon/Alma economy and could be severely damaged by a winter storm or by unseasonably cold temperatures, resulting in a substantial economic loss to the community. In addition, because of the infrequency of severe winter storms in this region, residents of Bacon County and the City of Alma are not well prepared to handle such events. Icy roads may result in a disproportionate number of automobile crashes because residents are not accustomed to driving in icy conditions. Being unprepared may result in loss of life or substantial damage to property and the economy.

Severe winter storms, at the worst, will produce sleet, freezing rain, and/or 1 to 2 inches of snow, with temperatures as low as the teens (°F). Snow accumulation usually melts away within 24 hours. Possible damage that may occur includes downed tree limbs, impassable roadways, power outages, increased emergency service workloads, failed water/sewer/septic systems, and (as mentioned above) crop damage and vehicle crashes.

B. Profile of Severe Winter Storm Events, Frequency of Occurrences, Probability:

The historic record for severe winter storms is spotty at best, with many unreported or underreported events. All of Bacon County and the City of Alma are vulnerable to severe winter storms, but the effects of most such events are minimal. Severe winter storms can occur at any time during winter months, usually with some warning being given in advance.

According to National Climatic Data Center information (see Appendix F), there are 4 reports of a severe winter storms (Frost/Freeze, Cold/Wind Chill, Winter Weather) occurring in Bacon County (including the City of Alma, as part of area-wide events) between 01/01/1997 and 12/31/2016. The total cost reported has been \$5,000,000 in crop damage. Total injuries were reported as zero. Members of the Bacon County HMPUC have witnessed many unreported and underreported cases of minimal to severe winter storm events occurring within Bacon County and the City of Alma that are not included in the NCDC database or in any other known data source.

In Bacon County (including the City of Alma), with the best available information, which includes the 4 reports of severe winter storms from the National Climatic Data Center and an additional 4 reports from communication with the local community, we have recorded eight

events in 66 years with a Historic Recurrence Interval of 8.25 years. This is a 12.12% Historic Frequency Chance per year. The past 10-year Record Frequency Per Year is 0.8, the past 20-year frequency is 0.4, and the past 50-year frequency is 0.16 (see GEMA PDM Hazard Frequencies Table contained in Appendix D Section I). Five severe winter storm events have occurred since the adoption of the previous Hazard Mitigation Plan.

Since the previous plan was completed, no changes in development within the community have occurred that would affect the community's overall vulnerability to this hazard.

C./D.: Inventory of Assets Exposed and Potential Loss to Severe Winter Storms:

Approximately 100% of the Residential property (3,931 of 3,931) in Bacon County (which includes the Residential property in the City of Alma) may be affected, with a total value of \$207,940,361. Also approximately 100% of the Commercial, Industrial, Agricultural, Religious/Non-Profit, Government, Education and Utility properties (1,262 of 1,262) in Bacon County (which includes those property types in the City of Alma) may be affected, with a total value of \$283,130,785. The values are based on the most recent available tax roll data for Bacon County and the City of Alma, provided by the Bacon County Tax Assessor's Office.

According to the inventory database reports and maps, all of the 115 Critical Facilities and Infrastructure for Bacon County (including the City of Alma) are located in areas that may be affected by severe winter storms. The total value of these 115 Critical Facilities is \$410,494,980, as well as a content value of \$31,024,007.

However, it should be noted that damage to buildings and other structures is not usually the most significant effect seen from severe winter storms. As described above, the major hazards from severe winter storms are vehicle crashes and crop damage, as well as frozen/burst water pipes, power outages, overtaxed emergency services, and roadway blockages. It is very rare for Bacon County to see any significant accumulation of snow or ice; however, some severe winter storms in past have been accompanied by .75 inch to .88 inch size hail. The community's main vulnerability is economic, since the blueberry crop is a very important part of the local economy and can easily be damaged by severe winter storms.

Damage to crops is not taken into account in the above estimates. According to the most recent estimate (2011) available on the University of Georgia's GeorgiaData website (www.georgiadata.org), the total farm gate value of agricultural production in Bacon County is \$171,465,000.

E. Land Use and Development Trends Related to Winter Storms:

Slight population growth has occurred in the last few years since the 2010 U.S. Census. The 2014 population of Bacon County (the most recent figure currently available) is estimated at 11,196, a 2.1% increase since 2010. The 2014 population of Alma is estimated at 3,514, a 1.0% increase since 2010. The number of households in Bacon County (including Alma) is estimated at 3,953 in 2014, a 2.1% increase since 2010.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

No other land use and development trends related to severe winter storms have been identified at this time.

F. Multi-Jurisdictional Severe Winter Storm Differences:

All of Bacon County and the City of Alma have an equal chance of being affected by severe winter storms. In the event of icy roads, hazards would be greater along high-traffic corridors (US-23 and GA-32) and in more densely populated areas (mainly the City of Alma). The impact in terms of crop damage would likely be more severely felt in unincorporated Bacon County, where more of the land is devoted to agriculture.

G. General Overall HRV Summary of Severe Winter Storm Events And their Impact On The Community:

Severe winter storms have the potential to cause damage at any place, at any time during the winter months, throughout Bacon County and the City of Alma. The cost of the damage may be higher in terms of vehicle crashes in the City of Alma and other population centers, and higher in terms of crop damage in the agricultural areas of the county. A majority of the severe winter storms that pass through the area cause minimal to no damage.

The Bacon County HMPUC recognizes severe winter storms as the eighth most likely natural hazard to occur and cause damage. They have developed a comprehensive range of Mitigation Goals, Objectives, and Action Steps to lessen severe winter storm impacts on Bacon County and the City of Alma. These are contained in Chapter 4, Section VIII.

Since the previous plan was approved no new developments, accomplished mitigation actions, new regulations or programs implementation have occurred which would either increase or decrease the community's vulnerability to this hazard.

Chapter 3:
Local Technological Hazard, Risk,
and Vulnerability (HRV) Summary

Not Applicable

Chapter 4: Local Natural Hazard Mitigation Goals and Objectives

Summary of Changes:

Table 4.1 provides a brief description of each section in this chapter and a summary of the changes that have been made.

Chapter 4 Section	Updates to Section
I. Flood	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
II. Thunderstorm/Wind	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
III. Wildfire	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
IV. Drought	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
V. Tornado	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
VI. Hurricane/Tropical Storm	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
VII. Hail	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)
VIII. Severe Winter Storm	Updated Goals, Objectives, and Action Step Formatting, Numbering and Data Fields, Updated or Deleted Prior Action Steps and Added New Action Steps (if applicable)

Table 4.1: Overview of updates to Chapter 4: Local Natural Hazards, Mitigation Goals and Objectives

Overall Community Mitigation Goals, Policies and Values Narrative

While Bacon County and the City of Alma each operate autonomously, there is a high level of cooperation exhibited when it comes to hazard mitigation and emergency planning efforts. Each local government has designated representatives to participate in the emergency management process, whether it be during planning, response, or recovery phases. The local Emergency Management Agency hosts regular meetings to gather all of the relevant local, regional and state partners together to develop effective plans and strengthen relationships among all of the stakeholders. Working together, Bacon County and the City of Alma have been able to access resources available through several state and federal sources that have been instrumental in improving the technical capabilities of these communities to more effectively mitigate hazards and provide more accurate warning and preparatory information to their citizens.

Overall, the priorities for each of the local communities has remained relatively unchanged. The hazards and risks associated with each have not changed and many of the action steps identified during previous versions of this plan are still relevant and remain a priority in this plan as well.

Authority for the development of this Plan was given by the Bacon County Commission as a result of their execution of the Grantee-Subgrantee Agreement for the Bacon County Hazard Mitigation Grant Program (HMGP) Planning Project; and by the City of Alma, located in Bacon County, through their participation in the planning project. The Bacon County Emergency Management Agency is authorized to oversee emergency management within both Bacon County and the City of Alma.

The two jurisdictions have many current policies and programs related to hazard mitigation, which are described in detail in the goals, objectives, and action steps contained in Sections I through VIII of Chapter 4 of this Plan. Both jurisdictions (within the boundaries of their budgets) have the ability to expand and improve their existing policies and programs as evidenced by the new and existing goals, objectives, and action steps included in this plan. The amount of resources available to the two jurisdictions for expansion and improvement of existing programs will depend on factors such as the local government budgets and the availability of state and federal funding to support hazard mitigation activities.

Below is a description of the comprehensive range of Mitigation Goals, Objectives, and Action Steps that were developed by the Bacon County HMPUC to reduce damages and improve safety through Hazard Mitigation. These have been arranged by the natural hazards contained in Chapter Two, Sections I-VIII. In this Chapter, in Sections I-VIII, there is an analysis and description of a comprehensive range of specific Mitigation Goals, Objectives, and Action Steps to reduce the effects of each hazard. There is particular emphasis on future and existing buildings and infrastructure.

The Bacon County HMPUC discussed and identified the comprehensive range of Mitigation Goals, Objectives, and Action Steps contained in Chapter 4 of this Plan after identifying the hazards noted in Chapter 2 Sections I-VIII of this Plan. All areas of Bacon County and the City of Alma were taken into account in the development of the comprehensive range of Mitigation Goals, Objectives, and Action Steps. These were identified after the weighing of many factors

discovered during the planning process, including risk assessment, storm history, past damage, community resources, and other factors.

A list of the comprehensive range of Mitigation Goals, Objectives, and Action Steps was compiled from the input of the Bacon County HMPUC, as well as from others within the community. Members of the Bacon County HMPUC prioritized the identified comprehensive range of Mitigation Goals, Objectives, and Action Steps based on what would be perceived as most beneficial to the community. The benefits were all determined to be greater than the costs involved (if any).

Several criteria were established to assist the Bacon County HMPUC members in the prioritization of these suggested comprehensive range of Mitigation Goals, Objectives, and Action Steps. Criteria included perceived cost vs. benefit or cost effectiveness, availability of potential funding sources, overall feasibility, measurable milestones, multiple objectives, both public, political support for the proposed actions, and the STAPLEE criteria.

Through this prioritization process, several projects emerged as being a greater priority than others. Some of the projects involved expending considerable amounts of funds to initiate the required actions. The determination of the cost/benefit analysis (such as the FEMA B/CA model) of a project will be implemented at the time of project application or funding request. Other projects allowed the communities to pursue completion of the project using potential grant funding. Still others required no significant financial commitment by the communities.

In Chapter 6, Section I-III, there is a description of the planning process involved in selecting the comprehensive range of Mitigation Goals, Objectives, and Action Steps. The Action Steps are given a rating of High, Medium, or Low Priority by the Bacon County HMPUC based on a number of factors (with a primary emphasis on prioritized cost versus benefit review) identified in Chapter 6 Section I.

Relevant comprehensive ranges of Mitigation Goals, Objectives, and Action Steps are listed below throughout the chapter. The Alma-Bacon County EMA Director has been chosen by Bacon County and the City of Alma to oversee the projects. The Alma-Bacon County EMA has been designated by Bacon County and the City of Alma to be the coordinating agency for implementation and administration of these projects.

Section I. **Flood**

A. Community Mitigation Goals

As previously indicated in Chapter 2 Section I, flooding may cause substantial damage to life, property and the economy in Bacon County and the City of Alma. Floods are unpredictable and could happen at any time in any flood prone area.

Many of these major flooding areas are located on or adjacent to the Big Satilla Creek, Hurricane Creek, and numerous other creeks and streams. Certain areas surrounding Hurricane Creek and the drainage canals in the City of Alma are subject to flooding. Flooding regularly occurs in certain areas due to rainfall and other factors. Due to these facts, the Bacon County HMPUC believes that the comprehensive range of Mitigation Goals, Objectives, and Action Steps listed below should be implemented to reduce the threat of flood damage in Bacon County and the City of Alma.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include upgrading drainage facilities and installing drainage facilities in areas lacking them. Non-structural options include analysis of properties affected by flooding to determine mitigation options, and updating local FIRM maps.

2. Existing Policies, Regulations, Ordinances and Land Use:

The river corridors are protected to the 100 year floodplain and up to 25 feet from the rested edge of the river through zoning. Wetland areas are protected by COE permits. Soil and Sedimentation Control Ordinances are in effect.

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. Alma has a City Planning Commission and participates in the Alma-Bacon County Development Authority. Bacon County participates in the Alma-Bacon County Development Authority.

Bacon County and the City of Alma participate in the National Flood Insurance Program.

Bacon County and the City of Alma do not participate in the Community Rating System (CRS) program. As of 2016, they were not eligible according to FEMA (<http://www.fema.gov/library/viewRecord.do?id=3629>).

All jurisdictions (within the boundaries of their budgets) have the ability to expand and improve their existing policies and programs as evidenced by the new and existing goals, objectives, and action steps included in this plan.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges in regards to the potential Hazard Mitigation Flood Planning Activities involving historic buildings. The Bacon County Courthouse and others are Critical Facilities that either already are on, or should be considered potentially eligible for, the National Register of Historic Places. The comprehensive range of Mitigation Goals, Objectives, and Action Steps for this hazard are outlined below.

There are no Critical Facilities that are also historic properties that appear in the floodplain according to GMIS. The GMIS reports do not list any Repetitive Loss/NFIP properties in Bacon County or the City of Alma.

There are 30 Critical Facilities that appear in the floodplain according to GMIS. Several of these are City of Alma Wastewater Lift Stations. These may pose a danger of overflow and/or sewage contamination of the surrounding area should they be flooded. However, their current locations and function are essential to the efficient operation of the wastewater system; moving them is not recommended.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of flooding.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of flooding.

C. Mitigation Strategy and Recommendations:

Goal #1: Prevent or reduce damage caused by floods in Bacon County and the City of Alma.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to floods.

Action Steps:

Action Step #1: Conduct storm-water drainage replacement, repair, and cleaning and maintain canals in Bacon County and the City of Alma.

Responsible Department	Bacon County /City of Alma Public Works Depts.
Anticipated Cost	\$500,000 each project
Existing and Potential Funding Sources	General Funds, GA DCA CDBG
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Plan flood and drainage projects in Bacon County in high risk areas and in areas lacking curb and gutter and/or adequate drainage structures.

Responsible Department	Bacon County Public Works Dept.
Anticipated Cost	\$500,000 each project
Existing and Potential Funding Sources	General Funds, GA DCA CDBG, DOHS-GEMA/FEMA
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	High
Status	Mims Road completed. Ongoing; extended beyond 2013-2018 due to importance.

Action Step #3: Plan flood and drainage projects in the City of Alma in high risk areas and in areas lacking curb and gutter and/or adequate drainage structures, including the GA-32 Bypass east of the Dixon St. and 16th St. Intersection.

Responsible Department	City of Alma Public Works Dept.
Anticipated Cost	\$500,000 each project
Existing and Potential Funding Sources	General Funds, GA DCA CDBG, DOHS-GEMA/FEMA
Jurisdiction	City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #4 (formerly #7): After flood events or other hazard events in Bacon County and the City of Alma, attempt to perform analysis on affected properties in order to determine whether events have occurred in the past and attempt to mitigate or purchase, if necessary.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$500,000 each project
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #5 (formerly #9): Continue membership in the NFIP by adopting updated ordinances and FIRM maps as updates are available

Responsible Department	Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/GEMA/FEMA Homeland Security
Jurisdiction	Bacon County and the City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #6 (new): Clean drainage pipes throughout Bacon County and the City of Alma, including the removal of intruding roots and any other blockages.

Responsible Department	Bacon County / City of Alma
Anticipated Cost	\$100,000
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and the City of Alma
Timeframe	2018-2023
Priority	High
Status	New

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy.

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

Objective 1

- Action Step #2 (Plan flood and drainage projects in Bacon County in high risk areas and in areas lacking curb and gutter and/or adequate drainage structures) has been partially completed (Mims Road has been completed).
- Action Step #4 (Work to alleviate evacuation and emergency access problems in various subdivisions (including Briar Creek) and in other areas in Bacon County and the City of Alma) has been completed.
- Action Step #5 (Study existing critical facilities to determine if they need flood retrofitting (and implement flood retrofitting projects), or should be moved out of the flood hazard area) has been completed.
- Action Step #6 (Work to preserve wetland areas in Bacon County and the City of Alma to ensure that excess water can be captured) has been completed.
- Action Step #8 (Work towards database to record depth of flooding to determine extent of potential damage) has been deleted because flood data can be obtained from other data sources, e.g. FEMA.

G. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #3
- Action Step #7 (renumbered to #4)
- Action Step #9 (renumbered to #5)

Section II. Thunderstorms and Wind

A. Community Mitigation Goals

As previously indicated in Chapter 2, Section II, thunderstorms and wind may cause substantial damage to life, property, and the economy in Bacon County and the City of Alma.

Thunderstorms and wind are unpredictable and could happen at any place and at any time in Bacon County and the City of Alma. Because these storms may be extremely violent and cause great damage, the HMPUC believes that the comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of thunderstorm and wind damage in Bacon County and the City of Alma.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include championing the building of new construction in compliance with minimum wind standards. Non-structural options include increasing public awareness of sources of emergency warning information and dissemination of other information to the public.

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4: STAPLEE Criteria was completed for each Action Step (see Appendix D Section I).

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendations:

Goal #1: Prevent or reduce damage caused by thunderstorms and winds in Bacon County and the City of Alma.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to thunderstorms and winds.

Action Steps:

Action Step #1: Increase public awareness of weather radios, emergency procedures and the use of a local radio station as the emergency broadcast system station in Bacon County and the City of Alma through public safety announcements, publications, and other means.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Disseminate information to the public concerning wind ratings, champion new construction being built to those minimum wind standards, and champion the wind retrofitting of Critical Facilities and existing buildings in Bacon County.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3: Designate and annually update emergency shelter locations. Conduct a public information campaign to raise awareness of the shelters. (New)

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	New

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

Objective 1

None.

G. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #2

Section III. Wildfire

A. Community Mitigation Goals

As previously indicated in Chapter 2, Section III, wildfire may cause substantial damage to life, property, and the economy in Bacon County and the City of Alma. Wildfire is unpredictable and could happen at any place and at any time in the community. The Bacon County HMPUC believes that, due to the great damage wildfire may cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of wildfire damage in the community.

B. Identification and Analysis of the Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include measures to reduce structural ignitability, building new fire stations and supplying the fire department with additional equipment, planning future residential development so as to mitigate wildfire hazards, improving infrastructure such as fire hydrants and water lines, and encouraging the maintenance of clear right-of-way.

Non-structural options include updating the fire master plan, conducting various training and outreach programs, creating new ordinances to mitigate wildfire hazards, improving public awareness of the dangers of wildfires, and promoting “Firewise” knowledge in the community.

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not. The Community Wildfire Protection Plan outlines strategies for mitigating wildfire damage in the community.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendation

Goal #1: Prevent or reduce damage caused by wildfire in Bacon County and the City of Alma.

Objective #1: Minimize losses to existing and future structures (especially Critical Facilities and Infrastructure) and woodlands due to wildfire.

Action Steps:

Action Step #1: Provide additional first responder training, air units, air unit chargers, Class A Pumper and Fire Knocker trucks and other equipment to all Bacon County Fire Departments for wildfire use.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$5,000,000
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	High
Status	Partially Completed. Additional first responder training is being provided. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2 (formerly #3): Partner with the Georgia Forestry Service and other fire service personnel to train all Bacon County Fire Department personnel on wildfire strategy and tactics.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3 (formerly #4): Support and enforce GA Forestry Commission burn ordinances and bans and promote hazardous fuel reduction by prescribed burning, mechanical treatment, or chemical treatment carried out and promoted by the GA Forestry Commission in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #4 (formerly #5): Acquire property for new Bacon County Volunteer Fire Stations and/or new additions to those existing stations, including the Scuffletown Fire District.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$1,000,000 each
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	High
Status	Partially Completed: New fire stations in different locations have been completed in the Taylor Town and Ware Fire Districts. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #5 (formerly #6): Plan to acquire property and build a new Bacon County Volunteer Fire Station at the Industrial Park.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$1,000,000
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #6 (formerly #7): Regularly update the fire master plan.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$20,000
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #7 (formerly #10): In the City of Alma, replace the four-inch and smaller water lines with six-inch water lines and hydrants.

Responsible Department	City of Alma Public Works Dept.
Anticipated Cost	\$500,000 each project
Existing and Potential Funding Sources	General Funds, GA DCA CDBG
Jurisdiction	City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #8 (formerly #11): Encourage agencies and private property owners to trim tree lines and create fire buffers/breaks around Critical Facilities, new and existing homes, businesses, and utilities in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #9 (formerly #12): Create new ordinances and enforce existing ordinances for new and existing construction that will help in the pre-disaster mitigation of wildfire.

Responsible Department	Bacon County Commission, City of Alma City Council
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #10 (formerly #13): Work with developers and homeowners to pre-plan each building site and/or subdivision to help in pre-disaster mitigation of wildfire.

Responsible Department	Alma-Bacon County EMA, Bacon County Commission, City of Alma City Council
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #11 (formerly #15): Apply for Haz Mat, FF 1 and FF 2 Training and purchase a media library for training purposes.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$100,000
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #12 (formerly #16): Apply for and purchase 2 turbo drafts for wildfire usage.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$6,000
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Objective #2: Obtain a FireWise Community Status by educating the Alma-Bacon County Fire Department personnel and the public on the hazards of wildfire and the pre-disaster mitigation thereof.

Action Steps:

Action Step #1: Maintain good public relations between the citizens of Bacon County and the City of Alma and the Fire Department and plan to increase levels of awareness and resources during peak hazard conditions through the use of education sessions, community meetings, etc.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Order copies of NFPA-299 “Protection of Life and Property From Wildfire” and other publications for the use of Bacon County and the City of Alma and for public use.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$500
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2013-2014
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3: Partner with the Georgia Forestry Commission to provide education to Bacon County and City of Alma communities and citizens on the pre-disaster mitigation of wildfire and use and develop grade school based programs to educate children.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Partially Completed: Field trips held for school classes and Fire Prevention Week promoted in October. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #4: Plan RFD meetings in Bacon County and the City of Alma and hold joint mock fire drills for all fire departments.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Objective #3: Implement priorities, projects and recommendations contained in GA Forestry Commission’s “Community Wildfire Protection Plan”.

Action Step #1: Create a minimum of 30 feet of defensible space around all governmental structures and recommend to homeowners and community stakeholders that they create same space through the trimming of shrubs, vines, and overhanging limbs, replacement of flammable plants with less flammable varieties, and removal of vegetation around chimneys.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County/City of Alma Public Works Depts.
Anticipated Cost	\$35 an acre
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA, USFS
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Reduce structural ignitability by cleaning flammable vegetative materials from roofs and gutters, store firewood appropriately, install skirting around raised structures, store water hoses for easy access, and replace pine straw and mulch with less flammable landscaping materials around all governmental structures and recommend same to homeowners and community stakeholders.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County/City of Alma Public Works Depts.
Anticipated Cost	\$35 an acre
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA, USFS
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3: Initiate Community Spring Clean Up Day and cut, prune, and mow vegetation in shared community spaces.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County/City of Alma Public Works Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Currently being done every spring and fall. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #4: Ensure driveway access/right-of-way clearance by maintaining vertical and horizontal clearance for emergency equipment and seeing that adequate lengths of culverts are installed to allow emergency vehicle access.

Responsible Department	Bacon County/City of Alma Road Depts. Building Inspection Depts. and Public Works Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #5: Ensure road access by identifying needed road improvements, and as roads are upgraded, widen to minimum standards with at least 50-foot diameter cul-de-sacs or turnarounds.

Responsible Department	Bacon County/City of Alma Road Depts. Building Inspection Depts. and Public Works Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #6: Examine existing codes and ordinances and amend and enforce existing building codes as they relate to skirting, propane tank locations, public nuisances (trash/debris), property address marking standards, and other relevant concerns; at such time as the development of zoning, planning and subdivision ordinances become practical, include fire department and emergency services input into the design of these.

Responsible Department	Bacon County/City of Alma Building Inspection Depts. and Public Works Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #7: On adjacent WUI Lands, reduce hazardous fuels by encouraging prescribed burning (by permit) for private landowners and industrial timberlands, particularly adjacent to residential areas.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County/City of Alma Building Inspection Depts. and Public Works Depts., GA Forestry Commission
Anticipated Cost	\$35 an acre
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA, USFS
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #8: Encourage railroads to better maintain their right-of-way, eliminating brush and grass through herbicide and mowing. Maintain firebreaks along right-of-way adjacent to residential areas.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County/City of Alma Building Inspection Depts. and Public Works Depts., Norfolk Southern
Anticipated Cost	\$35 an acre
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA, USFS
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #9: Improve existing fire lines/fire breaks by reducing hazardous fuels through the cleaning and re-harrowing of existing lines.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County/City of Alma Building Inspection Depts. and Public Works Depts., GA Forestry Commission
Anticipated Cost	\$35 an acre
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA, USFS
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #10: Inspect, maintain, and improve access to existing dry hydrants; add signage along roads to mark the hydrants.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD, Bacon County Road Dept. and Public Works Dept.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #11: Install elevated water tanks “drop tanks” with automatic cut-off valves for quick refilling of trucks.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$15,000
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #12: Ensure all fire stations and firefighters are equipped with wildland hand tools and lightweight PPE gear (45 sets) and investigate need for brush trucks.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$80,000
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Need for brush trucks has been investigated; 4 new brush trucks acquired. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #13: Maintain mobile generators to provide back-up power where needed.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	\$15,000
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	New

Action Step #14 (formerly #15): Ensure that all personnel are trained in wildfire suppression.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #15 (formerly #16): Conduct “How to Have a Firewise Home” Workshop for Bacon County residents.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/GA Forestry
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #16 (formerly #17): Conduct “Firewise” Workshop for Bacon County community leaders.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/GA Forestry
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #17 (formerly #18): Develop and distribute Firewise informational packets to code enforcement, realtors and insurance agents.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/GA Forestry
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #18 (formerly #19): Create and Exhibit a Wildfire Protection Display for the general public at the Blueberry Festival which usually runs in June. The display can be independent or combined with the GA Forestry Commission display.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/GA Forestry
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #19 (formerly #20): Invite the Alma Times and Waycross Journal Herald to community “Firewise” functions for news coverage and regularly submit press releases documenting wildfire risk improvements in Bacon County.

Responsible Department	Alma-Bacon County EMA, Alma-Bacon County FD
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds/GA Forestry
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

Objective 1

- Action Step #2 (Provide additional first responder training, air units, air unit chargers, Class A Pumper and Fire Knocker trucks and other equipment to all City of Alma Fire Departments for wildfire use) was deleted because the fire departments are now consolidated, so this Action Step is now covered under Action Step #1.
- Action Step #8 (Plan to acquire property for new Volunteer Fire Stations and/or new additions to those existing stations to the City of Alma Fire Stations as needed) was deleted because the fire departments are now consolidated, so this Action Step is now covered under Action Steps relating to the countywide fire department.
- Action Step #9 (Develop and equip a Hazardous Materials Team to deal with agricultural chemicals during wildfire events) has been completed; this is accomplished through a contract with the City of Douglas fire department.
- Action Step #14 (Purchase a tanker truck for rural fire fighting) has been completed. Five tanker trucks have been purchased.
- Action Step #17 (Initiate a regional fire training academy in the City of Alma/Bacon County) has been completed.

Objective 2

- None

Objective 3

- Action Step #13 (Obtain mobile generators (2-20kw generators) to provide back-up power where needed) has been completed. It is replaced with a new action step indicating the need to maintain those generators.
- Action Step #14 (Investigate need for additional drafting fittings for area irrigation wells) has been completed.
- Action Step #21 (Create a Bacon County WUI Fire Council to review progress towards mitigation goals, appoint and delegate special activities, work with Federal, State and Local officials to assess progress and develop future goals and action plans and work with residents to implement projects and Firewise activities) has been completed.

G. Unchanged Action Steps:

Objective 1

- Action Step #1
- Action Step #3 (renumbered to #2)
- Action Step #4 (renumbered to #3)
- Action Step #5 (renumbered to #4)
- Action Step #6 (renumbered to #5)
- Action Step #7 (renumbered to #6)
- Action Step #10 (renumbered to #7)
- Action Step #11 (renumbered to #8)
- Action Step #12 (renumbered to #9)

- Action Step #13 (renumbered to #10)
- Action Step #15 (renumbered to #11)
- Action Step #16 (renumbered to #12)

Objective 2

- Action Step #1
- Action Step #2
- Action Step #3
- Action Step #4

Objective 3

- Action Step #1
- Action Step #2
- Action Step #3
- Action Step #4
- Action Step #5
- Action Step #6
- Action Step #7
- Action Step #8
- Action Step #9
- Action Step #10
- Action Step #11
- Action Step #12
- Action Step #15 (renumbered to #14)
- Action Step #16 (renumbered to #15)
- Action Step #17 (renumbered to #16)
- Action Step #18 (renumbered to #17)
- Action Step #19 (renumbered to #18)
- Action Step #20 (renumbered to #19)

Section IV. Drought

A. Community Mitigation Goals

As previously indicated in Chapter 2 Section IV, drought may cause substantial economic, property, and personal damage in Bacon County and the City of Alma, particularly in the form of crop damage. Its effects can be long-term, with the damage increasing as time goes by. In addition, drought conditions can contribute to wildfires in the community. The Bacon County HMPUC believes that, due to the damage drought can cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the impact of drought on Bacon County and the City of Alma.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include maintenance of infrastructure, such as water and sewer lines, to maintain the water supply and mitigate post-drought flooding risk.

Non-structural options include distributing literature related to best management practices.

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendations

Goal #1: Prevent or reduce damage caused by Drought in Bacon County and the City of Alma. (Formerly Goal #3)

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to Drought. (Formerly Objective 3.1)

Action Steps:

Action Step #1: Maintain water and sewer lines and equipment prone to failure in unincorporated Bacon County and the City of Alma.

Responsible Department	Bacon County/City of Alma Public Works Depts.
Anticipated Cost	\$100,000
Existing and Potential Funding Sources	General Funds, GA DCA CDBG
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Extended beyond 2013-2018 due to importance.

Action Step #2: Work with the County Extension Agent to distribute literature related to best management practices in Bacon County and the City of Alma.

Responsible Department	County Extension Agent
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

Objective 1

- Action Step #1 (Replace antiquated water and sewer lines and equipment prone to failure in unincorporated Bacon County and the City of Alma through CDBG grant funds and other funds when available) has been completed. It is replaced by a new action step indicating the need to maintain the water lines.
- Action Step #3 (Promote increased usage of surface water and surface artesian flow for irrigation instead of well systems in Bacon County and the City of Alma) has been discontinued due to not being financially reasonable.

G. Unchanged Action Steps:

- Action Step #2

Section V. Tornado

A. Community Mitigation Goals

As previously indicated in Chapter 2, Section V, tornadoes may cause substantial damage to life, property, and the economy in Bacon County and the City of Alma. Tornadoes are unpredictable and could happen at any place and at any time. The Bacon County HMPUC believes that, because these tornadoes may be extremely powerful and cause great damage, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of tornado damage in Bacon County and the City of Alma.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include ensuring adequate tie-downs on manufactured homes.

Non-structural options include educating the public about shelters and weather alert systems, and developing a system for notifying and checking on at-risk residents.

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendation:

Goal #1: Prevent or reduce damage caused by tornadoes in Bacon County and the City of Alma.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to tornadoes.

Action Steps:

Action Step #1: Use building inspection program to inspect for adequate tie-downs on manufactured housing in Bacon County and the City of Alma.

Responsible Department	Bacon County/City of Alma Building Inspection Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Plan for pre-disaster mitigation in tornado and other hazard seasons by preparing public service announcements, brochures and solicit business participation in distributing information.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Partially Completed-Talks and PSAs given. Bacon County Hospital participates in regional tornado drills. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3: Promote safe shelter rooms for residents in private facilities in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Bacon County/City of Alma Building Inspection Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #4: Educate the public and market hazardous weather alert systems such as sirens, weather radios, reverse call system, and Code Red in the City of Alma and in populated areas of Bacon County.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$30,000
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #5: Develop grid pattern/address-based system to physically notify and check on high risk residents both before and after natural disaster events in the City of Alma and in populated areas of Bacon County.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$10,000
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

None

G. Unchanged Action Steps:

- Action Step #1
- Action Step #2
- Action Step #3
- Action Step #4
- Action Step #5

Section VI. Hurricanes/Tropical Storms

A. Community Mitigation Goals

As previously indicated in Chapter 2 Section VI, hurricanes/tropical storms may cause substantial damage to life, property, and the economy in Bacon County and the City of Alma. They are usually accompanied by some advanced notice, giving the community time to prepare and/or evacuate. The Bacon County HMPUC believes that, because these hurricanes/tropical storms have the potential to cause great damage, injury, and loss of life, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of hurricane/tropical storm damage in the community.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include improving evacuation routes, producing window covers, ensuring reliable power at critical facilities, and purchasing emergency communications equipment.

Non-structural options include identifying and advertising shelter locations and educating the public about evacuation routes and other hurricane-related issues,

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendations

Goal #1: Prevent or reduce damage caused by hurricanes/tropical storms in Bacon County and the City of Alma. (Formerly Goal #8)

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, and the public, due to hurricanes/tropical storms. (Formerly Objective 8.1)

Action Steps:

Action Step #1: Assemble/supply a list of facilities that could be used as public shelters for emergency purposes and test current shelters for safety and effectiveness in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Bacon County BOE
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA, Red Cross
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Partially Completed-Some facilities examined. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Work with GDOT to improve the designated SR-32 evacuation route, including 4-laning throughout Bacon County.

Responsible Department	Bacon County/City of Alma Road Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds, GDOT
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3 (formerly #4): Seek funding for automated recorders and information line to educate and inform the public on hazardous weather information, closings, events, etc.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$30,000 per year
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #4 (formerly #7): Cut made-to-fit plywood window covers and install construction materials necessary for use during hurricanes/tropical storms at Critical Facilities in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Bacon County/City of Alma Public Works Depts.
Anticipated Cost	\$100,000
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Partially Completed-Bacon County Hospital has partially completed this on the windows in the building. Ongoing – Extended beyond 2013-2018 due to importance.

Objective #2: Advise the public of health and safety precautions and procedures necessary during hurricanes/tropical storms and other events, and on pre-disaster mitigation, in general, in Bacon County and the City of Alma.

Action Steps:

Action Step #1: Acquire and distribute literature from state agencies regarding disaster health and safety issues in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA,
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2 (formerly #3): Distribute information concerning pre-disaster mitigation to area news markets and by speaking at schools and civic clubs in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Objective #3: Ensure reliable electrical power and communications efficiency at Critical Facilities and among agencies during hurricanes/tropical storms and other events in Bacon County and the City of Alma.

Action Steps:

Action Step #1: Purchase generators and trailers for use at Critical Facilities including water plant [all 3,466 City of Alma residents], lift stations [all 3,466 City of Alma residents], school cafeteria and shelter [all 11,096 Bacon County residents], and nursing home [88 patients] and pre-wire Critical Facilities and gas pumps for generator use in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$100,000
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA, Red Cross
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Partially Completed: Bacon County Jail, Alma-Bacon County Fire Department Main, Bacon County Primary School and the Bacon County Hospital now have generators. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Purchase communications equipment (radios, pagers, batteries, and chargers) that have multi-channel capabilities. Store them at certain Critical Facilities in Bacon County and the City of Alma, including the area schools.

Responsible Department	Alma-Bacon County EMA, Alma/Bacon County FD, Bacon County S.O., City of Alma P.D., Alma/Bacon County EMS, Alma/Bacon County Ambulance Svc.
Anticipated Cost	\$125,000
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Partially Completed-\$35,000 spent by Bacon County and \$26,000 (including a \$7,000 grant) spent by Bacon County Hospital. Ongoing – Extended beyond 2013-2018 due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

Objective 1

- Action Step #1 (If possible, design new educational facilities to the level that they could be used as public shelters for emergency purposes and test current shelters and educational facilities for safety and effectiveness in Bacon County and the City of Alma) has been deleted and replaced with a similar but slightly reworded Action Step (also numbered Action Step #1).
- Action Step #2 (Make changes to workroom of the main fire department in Alma to make it easier to handle emergency situations) has been completed.
- Action Step #3 (Work with GDOT to improve unsafe roads in Bacon County and the City of Alma that already are, or could be, evacuation routes, including GA #32 at 16th Street) has been deleted and replaced with a similar but slightly reworded Action Step (now numbered Action Step #2).
- Action Step #5 (Construct a storage building for storage of emergency materials needed for shelters, etc., relocate materials from Brunswick, secure additional cots and materials, medications and dehydrated foods for shelters) has been completed (new construction was not necessary but the existing Red Cross trailer meets the need).
- Action Step #6 (Apply for First Responder/Homeland Security trailer to be used for emergency services in Bacon County and the City of Alma) has been completed.
- Action Step #8 (Designate and attempt to supply new Red Cross Shelters and maintain an operating Red Cross office in Bacon County and the City of Alma) has been deleted because the community is adequately served in this regard by the Waycross and Valdosta Red Cross offices.
- Action Step #9 (Purchase two new ambulances and cardiac monitors to assist in emergency situations and evacuations) has been completed.

Objective 2

- Action Step #2 (Order additional road signage for emergency traffic circulation and publish most efficient routes in advance) has been completed.

Objective 3

- Action Step #3 (Purchase E 911 communications equipment and a CADD system for emergency location and mapping purposes) has been completed.
- Action Step #4 (Pursue funding for an Emergency Operations Center Building) has been completed.

G. Unchanged Action Steps:

Objective 1

- Action Step #4 (renumbered to #3)
- Action Step #7 (renumbered to #4)

Objective 2

- Action Step #1
- Action Step #3 (renumbered to #2)

Objective 3

- Action Step #1
- Action Step #2

Section VII. Hail

A. Community Mitigation Goals

As previously indicated in Chapter 2, Section VII, hail may cause substantial economic, property, and personal damage in Bacon County and the City of Alma. Hail is unpredictable and could happen at any place and at any time. The Bacon County HMPUC believes that, due to the damage hail may cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of hail damage in Bacon County and the City of Alma.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include installation of storm windows or ballistic film on critical facilities.

Non-structural options include encouraging the public to include hail damage in their insurance coverage and to store vehicles and other equipment in covered locations.

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendations

Goal #1: Prevent or reduce damage caused by hail in Bacon County and the City of Alma.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to hail.

Action Steps:

Action Step #1: Install storm windows, or ballistic film, on new and existing Critical Facilities and promote their installation on new and existing private buildings in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Bacon County/City of Alma Public Works Depts.
Anticipated Cost	\$5,000 each project
Existing and Potential Funding Sources	General Funds, DOHS-GEMA/FEMA
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Not Completed- Due to lack of funds. Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Encourage public to include hail damage under insurance coverage and to store equipment and vehicles under shelters in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

None

G. Unchanged Action Steps:

- Action Step #1
- Action Step #2

Section VIII. **Severe Winter Storm**

A. Community Mitigation Goals

As previously indicated in Chapter 2, Section VIII, severe winter storms may cause substantial economic, property, and personal damage in Bacon County and the City of Alma. Severe winter storms are usually predictable ahead of time, but they can happen in any part of Bacon County and the City of Alma during the period surrounding the winter months.

Severe winter storms may cause substantial problems. Bacon County and the City of Alma do not have the specialized equipment used during severe winter storms that most northern counties and cities possess. The Bacon County HMPUC believes that, due to the damage these severe winter storms have the potential to cause, a comprehensive range of Mitigation Goals, Objectives, and Action Steps (contained in Section C below) should be implemented to reduce the threat of severe winter storm damage in Bacon County and the City of Alma.

B. Identification and Analysis of Comprehensive Range of Mitigation Options

1. Structural and Non-Structural Mitigation:

Structural options in this plan include wrapping exposed pipes and adding insulation at critical facilities, championing new construction being built to appropriate low temperature ratings, and championing existing buildings being retrofitted.

Non-structural options include disseminating information to the public concerning severe winter storms and maintaining temperatures over 32 degrees during freezes in government facilities.

2. Existing Policies, Regulations, Ordinances and Land Use:

The City of Alma currently operates in compliance with the standards of the 2012 International Building Code. Bacon County currently does not have a building inspection program unless a courtesy inspection is request from the City of Alma. The City of Alma has a zoning ordinance and a Planning Commission, and unincorporated Bacon County does not.

3. Community Values, Historic and Special Considerations:

Bacon County and the City of Alma have historic buildings, a few of which are Critical Facilities. There are historic and special considerations that pose significant challenges with regard to mitigating thunderstorm/wind damage involving wind retrofitting on historic buildings. The Bacon County Courthouse and other historic Critical Facilities should be considered potentially eligible for the National Register.

Worksheet #4-STAPLEE Criteria was completed for each Action Step. Please see worksheets contained in Appendix D Section I.

4. New Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect new buildings and infrastructure from the effects of this hazard.

5. Existing Buildings and Infrastructure:

The mitigation strategy and recommendations that follow include action steps designed to protect existing buildings and infrastructure from the effects of this hazard.

C. Mitigation Strategy and Recommendations

Goal #1: Prevent or reduce damage caused by severe winter storms in Bacon County and the City of Alma.

Objective #1: Minimize losses to existing and future structures, especially Critical Facilities and Infrastructure, due to severe winter storms.

Action Steps:

Action Step #1: Continue the policy of wrapping exposed piping with insulation and installing new insulation layers at Critical Facilities in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$3,000 per year
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	High
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #2: Maintain temperatures above 32 degrees to prevent freezing in government-owned occupied and unoccupied structures in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA
Anticipated Cost	\$3,000 per year
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

Action Step #3: Disseminate information to the public concerning severe winter storms, champion new construction being built to appropriate low temperature ratings, and champion existing buildings being retrofitted in Bacon County and the City of Alma.

Responsible Department	Alma-Bacon County EMA, Bacon County/City of Alma Building Inspection Depts.
Anticipated Cost	Staff Time
Existing and Potential Funding Sources	General Funds
Jurisdiction	Bacon County and City of Alma
Timeframe	2018-2023
Priority	Medium
Status	Ongoing – Extended beyond 2013-2018 due to importance.

D. Special Multi-Jurisdictional Strategy and Considerations:

Most of the strategies outlined above apply to and are intended to be carried out by each of the local jurisdictions. In certain cases, where the action step may not apply to all jurisdictions, the applicable jurisdictions are noted in the table.

E. Local Public Information and Awareness Strategy:

All sections of the Plan shall be monitored and evaluated annually by the Alma-Bacon County EMA. Incremental accomplishments of Mitigation Goals, Objectives, and Action Steps will be reported to the public through appropriate means (TV, Web Site, Local Newspaper, City Council Meetings, County Commission Meetings, social media, etc.). By utilizing available resources, each jurisdiction will keep the public constantly informed of the development of these strategies and of how citizens can best assist with and/or take advantage of these efforts.

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property. For further details on plan execution, see Chapter 6.

F. Completed And Deleted Action Steps:

None

G. Unchanged Action Steps:

- Action Step #1
- Action Step #2
- Action Step #3

Chapter 5.
Local Technological Hazard
Mitigation Goals and Objectives

Not Applicable

Chapter 6: **Executing The Plan**

Summary of changes:

- Revised and updated language.

Section I. **Implementation of the Action Plan**

A. Administrative Actions

The meetings, planning process, prioritizing, etc. of the Bacon County HMPUC have been overseen by the Alma-Bacon County Emergency Management Agency. The Southern Georgia Regional Commission contracted with the Bacon County Commission to administer and facilitate the planning process. The Bacon County Commission and the City of Alma will adopt the Plan (on approval by GEMA and FEMA) by the resolution(s) contained in Appendix E Section IV.

B. Authority and Responsibility

The Bacon County Commission and the City of Alma have authorized the submission of this Plan to both GEMA and FEMA for approval.

As determined by the Bacon County Commission, the City of Alma, and the Bacon County HMPUC, the Alma-Bacon County EMA Director will be responsible for this Plan and its continued usage as a planning document. The EMA Director will oversee implementation, monitoring, and updates for both jurisdictions (Bacon County and the City of Alma). The respective jurisdictions will be responsible for the implementation of the specific mitigation activities proposed in this plan.

C. Prioritization

1. Methodology for Prioritization

In prioritizing the implementing of action steps identified in this plan, those hazards deemed to pose the greatest threat will be given the primary consideration. In prioritizing the implementation feasibility of the action steps and projects, local governments will take into consideration the additional factors of cost and time. Those activities requiring little cost and staff time to implement will be given highest implementation priority. Those steps requiring additional funding for equipment or staff time beyond the normal budgets of the communities will be incorporated into the budget process when possible based on the cost-benefit analysis described below.

2. Use of Cost Benefit Analysis

The data provided in Worksheet #3 will be utilized to quantify the number of persons and/or property at risk from each hazard. Combined with the criteria in Worksheet #4, this will allow local governments to assess the potential value of at-risk properties and the resulting benefits from the proposed action steps.

In prioritizing projects, the local governments will also utilize cost benefit analysis (CBA) to evaluate the feasibility of a major project. CBA is a well-established method for quantitatively comparing the benefits and costs of mitigation projects. The end result is a Benefit-Cost Ratio (BCR), which is derived from a project's total net present value of benefits divided by the total project cost estimate, which must include all documented project and maintenance costs. The benefits of mitigation projects are avoided damages, disruptions, losses, and casualties. Examples of common benefits include avoided or reduced damages to buildings, contents or infrastructure; economic impacts of loss of function of buildings; displacement costs for temporary quarters; loss of public services; loss of net business income; economic impacts of loss of function of infrastructure; road or bridge closures; loss of utility services; and deaths and injuries.

3. Use of Other Calculations

Availability of potential funding sources, overall feasibility, measurable milestones, multiple objectives, both public and political support for the proposed actions, and the STAPLEE criteria were additional calculations performed.

4. Use of Other Review Structure

In addition to the cost benefit analysis, other factors that may affect the prioritization of projects include the availability of special tax, grant and/or loan funds which become available on a limited basis to finance implementation, such as SPLOST funds or FEMA Pre-Disaster Mitigation Program funds.

D. Incorporation of Local PDM Plan Into Other Plans/Planning Measures

This Plan will be reviewed by Bacon County and the City of Alma. The requirements of this Hazard Mitigation Plan will be taken into consideration and will be incorporated into Comprehensive Plans, Five Year Short-Term Work Program, Capital Improvement Plans, Local Emergency Operations Plans, and all other such Plans as appropriate.

Once this plan is approved, it will be used by the consultants and planning committees responsible for the update process for the County and City Comprehensive Plans, Short-Term Work Programs, and all other plans that could incorporate the requirements of this plan.

To facilitate inclusion of this Plan, the Bacon County Commission and the City of Alma will provide a copy of this Plan to the persons and/or committees responsible for writing and updating plans.

Section II. **Evaluation and Monitoring**

A. Method

The Alma-Bacon County EMA Director will be charged with ensuring that this plan is monitored and periodically updated in subsequent years. The method that the Alma-Bacon County EMA will use to monitor the plan and evaluate implementation progress will be the following:

- The Alma-Bacon County EMA will conduct quarterly telephone interviews with the various local governments and area agencies in order to chart their plan progress.
- The EMA Director will hold formal public meetings at least once a year to monitor the progress of the plan implementation and allow the public a forum for expressing concerns, opinions, and ideas.
- Throughout the year, a series of informal meetings will be held in which various aspects of the plan, including monitoring and evaluation, are discussed.

B. Criteria Used To Monitor and Evaluate the Plan

The major criteria to measure plan success will be the number of goals, objectives, and action steps, or components thereof, that have been completed, which in turn will result in savings of life, money, and property.

Section III. **Plan Update and Maintenance**

A. Public Involvement

Because the Hazard Mitigation Plan is intended to help ensure a safe and livable environment for all Bacon County and City of Alma residents, it is imperative that public involvement be an integral part of the planning process.

Since adoption of the original Bacon County Pre-Disaster Mitigation Plan, citizens have been kept involved and apprised of plan progress through such forums as regularly scheduled Commissioner meetings, public hearings, and applicable newspaper coverage. This same level of public education and awareness and citizen involvement will continue over the next five years until the next required update of the Hazard Mitigation Plan. When specific issues dictate, public hearings will be conducted, and all other community planning efforts (Comprehensive Plan, Regional Plan, etc.) will afford citizens the opportunity to participate in and comment on the need to incorporate hazard mitigation initiatives.

To facilitate the goal of continued public involvement in the planning process, the EMA will assure that the following steps are taken:

- The public will be directly involved in the update and review of the plan as members of the Pre-Disaster Mitigation Planning Committee.

- Copies of the plan will be kept on hand at appropriate agencies throughout Lowndes County.
- The plan will be available City, County, and/or Regional Commission websites, and will contain an e-mail address and phone number the public can use for submitting comments and concerns about the plan.
- A public meeting will be held annually to provide the public with a forum for expressing concerns, opinions, and ideas. The EMA will set meeting schedules and dates and use County resources to publicize and host this meeting.

B. Timeframe

Pursuant to the requirements set forth in the Disaster Mitigation Act of 2000, the community is again required to update and evaluate the plan no more than five years after its adoption. At least one year prior to the end of the required five-year update period, the EMA Director will begin the planning process for a new update to this plan. This will consist of establishing a new planning committee that will be tasked with completing the update following the same process used for this update.

No later than the conclusion of the five-year period following approval of the plan update, the Lowndes County EMA Director shall submit a revised Hazard Mitigation Plan to GEMA for its approval. It is important to note that the plan update process, as established by the planning committee, is subject to change, depending upon subsequent regulations and/or requirements set forth by GEMA and FEMA.

Chapter 7: **Conclusion**

Summary of changes:

- Revised and updated language.

Bacon County and the City of Alma have suffered considerable damage in the past from natural hazards. Planning ahead and undertaking structural and nonstructural action steps before a disaster occurs can save lives and property. This philosophy has been the driving force behind the preparation of the Lowndes County Hazard Mitigation Plan.

Education of the population and enhanced warning can decrease the vulnerability of the county's citizens and visitors. Continued and improved public information and communication with the population are important parts of this plan. Because of this planning process, Bacon County and City of Alma officials have gained a better understanding of the natural and man-made hazards affecting our community.

As a result of the planning process described in Chapter 1 and the hazard, risk, and vulnerability assessment in Chapter 2, Bacon County and the City of Alma have a realistic perspective on the hazards to which the community is exposed. With the mitigation strategy outlined in Chapter 4, and the implementation plan included in Chapter 6, the local leaders have an "action plan" to follow when allocating resources to reduce their community's vulnerability to such hazards.

References

Bacon County Board of Tax Assessors (<http://www.qpublic.net/ga/bacon/>)

City of Alma (<http://www.cityofalmaga.gov/>)

Federal Emergency Management Agency (www.fema.gov)

FEMA National Flood Insurance Program Community Status Book
(<https://www.fema.gov/national-flood-insurance-program-community-status-book>)

Georgia Emergency Management Agency, Georgia Mitigation Information System
(<https://apps.itos.uga.edu/GEMA.GMIS/>)

Georgia Emergency Management and Homeland Security Agency (<http://www.gema.ga.gov/>)

Georgia Forestry Commission (www.gatrees.org)

National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database (<http://www.ncdc.noaa.gov/stormevents/>)

Southern Georgia Regional Commission (www.sgrc.us)

U.S. Drought Monitor (<http://droughtmonitor.unl.edu/>)

United States Census Bureau (www.census.gov)

University of Georgia College of Agriculture and Environmental Sciences. *2014 Farm Gate Value Report*. (<http://caes2.caes.uga.edu/center/caed/pubs/annual.html>)

Appendices

Contents

Appendix A. Hazard Identification, Risk, and Vulnerability (HRV)

- Section I. Flood
 - Worksheet 3A
 - GMIS Critical Facilities Map
 - FEMA flood map
- Section II. Thunderstorms and Wind
 - Worksheet 3A
 - GMIS Critical Facilities Map
 - Hurricane MEOW map
- Section III. Wildfire
 - Worksheet 3A
 - GMIS Critical Facilities Map
- Section IV. Drought
 - Worksheet 3A
 - GMIS Critical Facilities Map
 - UNL Drought Monitor Map
- Section V. Tornado
 - Worksheet 3A
 - GMIS Critical Facilities Map
 - Tornado track map
- Section VI. Hurricanes/Tropical Storms
 - Worksheet 3A
 - GMIS Critical Facilities Map
- Section VII. Hail
 - Worksheet 3A
 - GMIS Critical Facilities Map
- Section VIII. Severe Winter Storm
 - Worksheet 3A
 - GMIS Critical Facilities Map

Appendix B. Growth and Development Trends

- Census Demographic Summary
- Comprehensive Plan Short Term Work Program
- Bacon County 2015 Tax Digest
- Alma 2015 Tax Digest

Appendix C. Other Planning Documents

- Community Wildfire Protection Plan

Appendix D. Worksheets Used In Planning Process

- Hazard Frequency Table – Bacon County and City of Alma
- GEMA Worksheet #1 (example)
- GEMA Worksheet #2 (example)
- GEMA Worksheet #4 (for each objective)

Appendix E. Copies of Required Planning Documentation

- I. Public Notices
- II. Sign-in Sheets

III. Adoption Resolutions

Appendix F. Reports and Inventories

- I. General Historic Reports
 1. Flood – NCDC data
 2. Thunderstorm/Wind – NCDC data
 3. Wildfire – NCDC data
 4. Drought – NCDC data
 - 4a. Drought – UNL Drought Monitor data
 5. Tornado – NCDC data
 6. Hurricane/Tropical Storm – NCDC data
 7. Hail – NCDC data
 8. Severe Winter Storm – NCDC data
- II. Critical Facilities Inventory

Appendix G. HAZUS Report